# Agricultural development in the North-West Province of South Africa through the application of comprehensive project planning and appraisal methodologies.

by

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## ABSTRACT

South Africa's main economic and social problems relate to poverty, racial inequality and poor growth. An equitable society, founded on a growing economy, is a policy aim, in which agriculture has a catalyst-role. The entrance of small farmers into mainstream agriculture is a specific priority, as historic inequitable support limited access to services and resources. Agriculture consequently plays only a supplemental role in most black rural communities. A favourable policy environment for agricultural development has now been established, but practical empowerment and success remain rare. This limiting environment, dealt with through two hypotheses, constitutes the issue examined: The first hypothesis states that economic rural diversity must be addressed in agricultural planning and support of the project area. The second states that transactions costs are reduced through production chain integration. Focused support, based on these principles constitutes a redesigned project approach, for empowering emerging farmers.

The analytical framework consists of a literature review, analysing agricultural planning to identify criteria for a redesigned project cycle, accommodating holistic planning. This established specific project design criteria to deal with diversity description; linkage facilitation; support co-ordination; participation and empowerment. It is argued the integration of small farmers with role-players through co-operation in a project intervention addresses most access limitations. Recognition and description of economic diversity and application of participative processes are proposed in a redesigned project approach, enhancing commitment and intervention sustainability.

The application of this comprehensive project planning approach, based on these criteria, is subsequently applied in an *ex post* evaluation and *ex ante* analysis of a case study. An analytical methodology dealing with direct and indirect project impacts, determined through a combination of qualitative and quantitative procedures was used. Procedural tools included trend and logical framework analysis, a typological questionnaire, basic financial and economic analyses and a conclusive decision rules framework.

The Sheila project in the North West Province of South Africa, aiming to establish commercially viable producers, was established in 1976 and terminated in 1994. Participatory analysis to understand agricultural and social dynamics commenced during 1997. This enlightened the quantitative phase, with a typological survey collecting data on 128 variables through interviews with 123 farmers. Findings indicated significant economic variation between farmers. Farmer involvement was limited with project management being responsible for production. Benefits included access to mechanisation, credit and management. Land holdings were enlarged from five to 15 ha while average yields improved from ± 0.5 t/ha to ±2.0 t/ha. The project resulted in more food, income and infrastructure, enhancing quality of life.

However, independent farmers were not established. In terms of the project design criteria, economic diversity was not integrated in planning whilst linkages between role-players were insufficient. Co-ordination and cost saving measures were not sufficiently developed, nor were participation and empowerment. Technical innovations used (mechanisation and management) failed to account for social realities (literacy and skills level, communal practices). The major objective: to develop arable potential and increase self-sufficiency was achieved temporarily, for a limited number of farmers, at significant public cost (subsidisation and debt write offs), leading to chronic debt problems and lack of preparation for the discipline of the subsequent free market. Farmers were often technically ill-equipped to farm. Neglect of diversity and farmers' never accepting ownership played a significant role in ultimate project failure.

Participative enquiry established that crop yields dropped by 20% while farmer numbers decreased from roughly 400 to fewer than 50 since project termination. Sharecropping still constitutes access to cropland. Current constraints relate to capital, mechanisation and communal relations. A typology describing economic diversity was developed: 'Inactive landowners' have limited access to resources; for 'opportunists' mechanisation services are scarce; 'entrepreneurs' complain of communication and mechanisation failure; while 'commercialising farmers' are constrained by a lack of cropland.

This study established that project design criteria, dealing with description of economic diversity and cost saving, through integration of role-players, will enhance resource poor farmer participation and thus empowerment, and should shape project development. Integrating these criteria in a comprehensive project design and implementation cycle, will address economic diversity, cost and access constraints, and will constitute a focus shift towards participative human capacity development. Such a redesigned project approach represents a sound development strategy facilitating equitable agricultural growth and access to services and resources.

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# ABBREVIATIONS:

| | |
|---|---|
| ABC: | Agricultural Business Chamber |
| AIDS: | Acquired Immunity Deficiency Syndrome |
| ANFP: | average net farm profit (gross income-depreciation) |
| ANOVA: | Analysis of variance |
| ARC: | Agricultural Research Council |
| ARDRI: | Agricultural and Rural Development Research Institute |
| CBA: | Cost-Benefit Approach |
| CBO: | Community Based Organisation |
| CED: | Corporation for Economic Development |
| CV: | Coefficient of Variance |
| DBSA: | Development Bank of Southern Africa |
| DSI: | Directorate Statistical Information |
| EIA: | Environmental impact assessment |
| EU: | European Union |
| FAO: | Food and Agriculture Organisation |
| FSP: | Farmer Support Programme |
| FSR: | Farming Systems Research |
| GATT: | General Agreement on Tariffs and Trade |
| GDP: | Gross domestic product |
| GEAR: | Growth, Employment and Redistribution Program |
| HCD: | Human Capital Development |
| HDI: | Human Development Index |
| HIV: | Human Immunodeficiency Virus |
| ICRA: | International Centre for Research in development orientated Agriculture |
| IDP: | Integrated Development Programme |
| IFAD: | International Fund for Agricultural Development |
| IRD: | Integrated Rural Development |
| IRR: | Internal Rate of return |
| ISRDP: | Integrated Sustainable Rural Development Programme |
| LAPC: | Land and Agricultural Policy Centre |
| LFA: | Logical Framework Analysis |
| LRAD: | Land reform for agricultural development |
| NAFU: | National African Farmers' Union |
| NDA: | National Department of Agriculture |
| NGO's: | Non Government Organisations |
| NPV: | net present value |
| NWAU : | North West Agricultural Union |
| NWC: | North West Cooperative |
| NWDACE: | North West Department of Agriculture, Conservation and Environment |
| OVI: | Objectively Verifiable Indicators |
| PCA: | Principal Component Analysis |
| PLA: | Participatory Learning and Action |
| RDP: | Reconstruction and Development Program |
| RSA: | Republic of South Africa |
| SA: | South Africa |
| SADC: | Southern African Development Community |
| SPSS: | Statistical Package for Social Sciences |
| SWC: | South West Cooperative |
| UN: | United Nations |
| USA: | United States of America |
| USAID: | United States Agency for International Development |

# CHAPTER 1: INTRODUCTION

## 1.1 Background

Major policy initiatives for social and economic development are currently being implemented in SA. There is consensus that a more equitable dispensation is needed for stability and growth. South Africa's main economic and social problems relate to unemployment, poverty and racial inequality. Although growth alone does not ensure equality, these issues are addressed through a vibrant, growing economy (Eckert, 1991; Nomvete, Maasdorp & Thomas, 1997; Fenyes & Meyer, 1998; McDonald & Piesse, 1999; Anon., 2001b). How to obtain economic growth, to enhance livelihoods in disadvantaged communities in particular, is critical. Government policies (including the agricultural sector plan) indicate that a market driven economy is seen as the vehicle for generating wealth. A critical aspect is equitable access to opportunities and distribution of benefits, i.e. growth with equity strategies (Eckert, 1991; Nomvete, *et. al.*, 1997; Brand, Christodoulou, Van Rooyen & Vink, 1992; Van Rooyen, *et. al.*, 1998; Anon., 2001b).

As the majority of the poor and large numbers of the unemployed reside in rural areas, agriculture has a key role in equitable growth: It is a vessel to address poverty and therefore rural development (Van Rooyen, 1983; Eckert, 1996; Lipton, *et. al.*, 1996). However, weak support strategies and lack of access to resources and services inhibits agriculture's contribution (Van Rooyen, *et. al.,* 1994; Singini & Van Rooyen, 1995; Nomvete, *et. al.*, 1997; Van Rooyen *et. al.*, 1998; Kirsten, Van Zyl & Vink, 1998). Improving the welfare of the rural poor therefore depends on empowerment through access to productive resources and services, in order to utilise economic opportunities (Deen, 2001). Economic analysis proves that agriculture's role in development is often underestimated and bias towards urban development is often observed (Mellor, 1986; Eicher & Staatz, 1990; Van Zyl & Vink, 1988; McCalla, 1999). Between 1987-98 agricultural aid to developing countries (accounting for 85 % of the worlds poor) shrank by two-thirds (Anon., 2001). In South Africa an urban bias was evident in public investment, macro-economic policies and legislation. Limited investment in rural infrastructure, agricultural budgets and limited import tariffs compounded the problems of the agricultural industry (Binswanger, 1994; Van Rooyen, *et. al.*, 1994; Vink & Coetzee, 1995; Kirsten, 1998; McDonald & Piesse, 1999). However, recent policy positions as expressed in government budgets speeches (2000-2002), state of the nation addresses (1999 – 2001) as well as the agricultural strategy plan adopted during 2001, indicate a redirection from government towards development (Anon., 2001b).

This study's point of departure supports the argument that agriculture has a significant direct and indirect role to play in economic transformation and in achieving growth with equity in South Africa (Anon., 1998c; Van Zyl & Vink, 1998; Anon., 2001b). It is expected to provide a growth stimulus through a range of income multipliers and employment linkages (Eckert, Liebenberg & Troskie, 1997; Van Rooyen & Sigwele, 1998). Given that SA has a highly skewed income distribution (Makhura & Kirsten, 1999), restructuring a key economic sector such as agriculture is required to address this inequity. This will require strategic

interventions for the previously disadvantaged agricultural sector (Van Zyl, Kirsten & Binswanger, 1996). Although smallholder support internationally has a long history, in SA it has been severely constrained by policy considerations. Apartheid effectively ended black commercial agricultural production evident during the late 1800's and early 1900s (Van Rooyen & Nene, 1996; Chikanda & Kirsten, 1998), establishing a legacy of small scale production systems although significant success occurred in cases where innovative focused farmer support was implemented during the 1980s and 1990s (Singini & Van Rooyen, 1995).

Recently, the impact of the global market on SA's agriculture has been significant. A macro-level analysis of the extensive deregulation process shows that the sector has benefited (Van Rooyen, Esterhuizen & Doyer, 2001; Vink & D'Haese, 2002). Despite increased bankruptcies, efficiency and competitiveness increased substantially over the past decade. Productivity rates increased as a result of more market-oriented policies. Innovations emerged to counter high input prices (Vink, 2000). However, despite opportunities in the global market, the `playing field´ in agricultural trade is still uneven, as illustrated by significant agricultural subsidies provided by major international economies. For example, only 4% of a South African farmer's income originates directly or indirectly from government support, through research and support measures, compared with 45% for the EU and 22% for the USA (Van Rooyen, Esterhuizen & Doyer, 2001). In the North West Province of SA, the global environment is inhibitively competitive and unequal, making policy support, especially to small-scale farmers, an important instrument for development and broad based participation in the agricultural sector. In this context an important challenge is to improve competitiveness and farm level profitability at commercial and emerging farmer levels. Government support could play a significant role in enhancing the competitiveness of emerging farmers, provided that such efforts promote linkages with viable agribusiness endeavours.

The diverse character of SA's farming environment complicates restructuring and development. Describing local agriculture as typically dualistic (commercial and developing) as put forward by Lipton's two agricultures (1996) is too simplistic to adequately describe existing diversity and facilitate appropriate development strategies. A range of often confusing descriptions such as commercial, small scale, emerging, subsistence, etc., illustrates this. A particular challenge in this diverse setting is to support disadvantaged agricultural producers to establish viable economic livelihoods, through removal of structural constraints inhibiting agricultural growth (Van Zyl & Kirsten, 1998). Failure to address this will inhibit the impact that agriculture could have on economic development and livelihoods in the RSA. Development support strategies should serve the diversity along the farming continuum to achieve economic competitiveness and sustainability. Support services should cater for different agricultural groups and farming systems and should promote partnership models between public and private sectors, especially as a strategy to empower the resource poor to commercialise (Eicher & Rukini, 1994).

A comprehensive approach, mobilising private and public support in order to stimulate growth with equity in agriculture is critical: This study focuses on a comprehensive project development approach as a public delivery strategy, as basis for appropriate investments in production systems, resources and support programmes in the North West Province.

## 1.2 Problem statement

Price J. Gittinger in the book "The economic analysis of agricultural projects" argues that agricultural projects are the "cutting edge" of development (Gittinger, 1982 pp3-40). During the 1970s and 80s the World Bank also promoted this concept. However, its validity is increasingly questioned since the early 1990s due to a low apparent success rate (Anon., 1987; Van Rooyen, *et. al.*, 1987; FAO, 1988). The question this thesis therefore poses is whether the project approach still constitutes an effective development strategy for resource poor farmers. Through an in depth literature review and the analysis of the Sheila project in the North West Province of South Africa, the aim of this research is to assess the project approach and develop a new planning framework to re-establish it as sound approach for small farmer development.

Centrally managed, capital-intensive projects, initiated to increase production and provide employment were the mainstay of agricultural development internationally and in SA until the late 1980s. However, the contention is that these schemes largely failed, due to insufficient attention to social reality, technical complexities, management requirements and restricted capacity building. Although projects often resulted in higher production yields in the short run, this was generally not sustained. While project objectives and intentions were sound, failure resulted from undue emphasis on physical planning and failure to provide incentives to participants. Inadequate participation and top-down planning also resulted in lack of ownership (Van Rooyen & Nene, 1998). During the 1990s development agencies became disillusioned with centrally managed farmer development projects, as limited effectiveness and relatively high costs were noted (Carruthers & Kydd, 1997).

However, to some extent poor performance arose from weak implementation and management of the project cycle, rather than the model being inappropriate. A participatory planning model, emphasising ownership, may indeed be an effective development mechanism. The problem statement therefore deals with the applicability of the project planning approach to agricultural development.

Sound agricultural development strategies require focused support dealing specifically with constraints and opportunities. This should include access to resources (inputs) and services, i.e. extension, research, training and information (Singini & Van Rooyen, 1995). A strategic approach to facilitate such access is clearly required. The focus should be on optimising linkages, access to input and output markets, participation and management skills. Research into viable and sustainable practices is required while cost reduction, risk management and scale appropriate technologies must also be investigated (Anon., 1996b). High input costs prove to be an especially inhibiting factor. According to Delgado (1998), a form of integration or linkage between stakeholders in the agricultural industry is needed to mitigate these costs and facilitate access to support. Deliberate effort must therefore be made to facilitate participation, capacity building and business linkages within the value chain. An implementing agent, with the primary role to optimise linkages, could be vital in such an effort (Nomvete *et. al.*, 1997).

All this indicates that a redesigned project approach, defined as an intervention to facilitate access to support services and resources for committed groups of farmers, as part of participative planning and management should still be a productive instrument in agricultural development. The question is how this instrument can be adapted to realise its potential to reduce costs and facilitate agricultural development.

Investigating hypothesis:

Following this argument, two hypotheses are formulated for a scientific investigation: The first deals with the observation that less successful agricultural interventions (projects) were often designed on the premise of the Taylorism of 'one technology good enough for all' (Brossier, *et. al.*, 1994 as quoted by Laurent, *et. al.*, 1999). This view embodies the notion of technical optimality as the driver of economic development and ignores the reality of highly diversified agricultural structures, with equally diverse requirements for support strategies. The first hypothesis therefore reads:

Hypothesis 1: Quantification and incorporation of the economic and social diversity in an agricultural community is required to facilitate planning and implementation of equitable growth interventions and strategies.

A second hypothesis follows from the acceptance of the first hypotheses and acknowledgement that coordinated and focused project support measures albeit unique and specific, are required to integrate resource poor small farmers into commercialised agriculture. The second hypothesis therefore reads:

Hypothesis 2: A project planning and implementation cycle, accommodating diversity, constitutes a viable strategy for support of resource poor farmers, as it addresses the major issue of cost effective access to resources and services, in an integrated and holistic manner.

These hypotheses deal with two major prerequisites for agricultural development: Diversity must be described and homogeneous agricultural groups identified, before integrating activities through the project approach can provide resource poor small farmers with access to sound services and resources. This approach could contribute significantly towards achieving rural growth through outputs such as household food security, employment and economic production. This study aims to describe a 'new' and productive approach to project design and implementation. Its definition, elements, target groups, conditions etc., will aim to position agricultural projects as the 'cutting edge of development' (Gittinger, 1982).

## 1.3 Contextualising the study

As a result of dramatic political change in South Africa during the early nineties, the structure of institutional agricultural support in the previously independent Bophuthatswana and Western Transvaal region changed substantially. The North West Province was proclaimed during 1994 as part of South Africa's new constitution and includes the Rustenburg, Mafikeng and Vryburg regions. The provincial North West Department of Agriculture, Conservation and Environment (NWDACE), consisting of former public agricultural services and the Agricultural Development Corporation of Bophuthatswana parastatal (Agricor), was initiated. A policy and common vision was gradually developed amongst these entities. Determining effective and efficient agricultural support services, especially to previously disadvantaged farmers, is however a continuing process. To contribute to the process, this research study focuses on the application of a restructured project approach to serve the spectrum of small farmers as well as the organisations and structures that will be required to support these farmers in their agricultural endeavours.

The focus of this study is devising a comprehensive model or instrument for planning and implementing support to the diverse developing agricultural sector in North West, through the project approach, that provides for various farmer types. This model is furthermore based on the observation that the underdeveloped nature of input and output markets serving small-scale farmers necessitates selective public sector interventions for which the project approach remains a viable option.

## 1.4 Aim and outline of the study:

This study aims to provide systematic and constructive argumentation towards the development of a support strategy for previously disadvantaged farmers in North West, based on the project approach. A thorough analysis of development theory, policy directives, operational experience and an impact assessment of an appropriate case study will culminate in the promotion of a planning and implementation strategy for a productive, sustainable small-scale agricultural sector.

### 1.4.1 Specific objectives:

The study aims to investigate the stated hypotheses through the achievement of the following specific objectives:

- To investigate agricultural development planning strategies and models, particularly the application of the project approach.
- To develop appropriate design criteria for a project approach, accounting for economic diversity in the developing agricultural sector.

### 1.4.2 Outline:

The context, background, general problem statement and hypotheses of the study are described in chapter one. Also included are the aim and specific objectives of the study.

In chapter two the theoretical framework of reference for this study is developed. Evidence regarding agricultural development and its role in broad economic development is analysed to highlight certain qualifications and to develop criteria for viable agricultural development models. Especially the extent and significance of economic diversity in rural communities is described, whilst quantification of this diversity is addressed through describing a typological approach. It also includes a critical evaluation of development approaches and policies influencing the agricultural sector of the North West province of the RSA.

In chapter three, the project approach is analysed. Due to the political, institutional system until the early nineties, no broad based, viable small-scale sector could develop in the RSA. Most ruralites use agriculture to supplement other incomes. However, studies show that the previously disadvantaged sector can contribute significantly to agricultural production. Lessons from agricultural development, experience, international and national policy are quantified into concrete project design criteria and key findings are reached regarding the general hypothesis that a project approach still has application. The refined "design criteria", are then incorporated into project design and implementation. To test the validity

of these criteria, a project design, incorporating the proposed criteria is used in the *ex ante* evaluation of a project proposal.

In chapter four a comprehensive framework for analysis is developed, consisting of qualitative and quantitative methods of investigation. An appropriate methodology to analyse the Sheila project data, the hypotheses and the project design criteria is established. Direct impacts are determined, including institutional impact determined through qualitative trend analysis; effectiveness analysis determined through qualitative logical framework analysis; social impact determined quantitatively through a typological survey; as well as quantitative financial and economic analyses. Indirect impacts determined include spillover, linkages and environmental impact. All project impacts are summarised in a qualitative, systemic assessment. Data collection entailed a combination of interviews with groups and individuals, including experts, a structured survey and a comprehensive literature review.

The fifth chapter contextualises the study with a description of the political and economic context of the North West Province of South Africa, with a focus on the project approach as it was employed to support small farmer development.

This leads to the case study in chapter six: The Sheila project, where many of the strategies discussed were practised, is analysed through an ex *post* evaluation of the 24 year-lifespan of the project, relying on various available data sources. The essence of the chapter is the development of a profile of the diverse farming community of Sheila, through a typology analysis. A typology model with potentially wider use is also developed.

In chapter seven a new project is proposed (*ex ante* evaluation) and dealt with, based on a broad consultative process with identified groups, while recognising the lessons from the previous chapters. The hypotheses are tested through an *ex ante* evaluation of the project approach. An analytical framework is completed to describe and illustrate the appropriate strategies to be followed in the development of particular groups, through the application of the project approach.

Chapter eight deals with a final discussion, major findings, conclusions and recommendations regarding the appropriate strategy and the role of the project approach in the North West Province.

# CHAPTER TWO: STRATEGIC CONSIDERATIONS: AGRICULTURAL DEVELOPMENT IN SA

## 2.1 Introduction

Due to dynamic features such as technological innovation and change, food security status, changing markets and population demographics, agriculture is continuously transforming. Therefore farmers constantly have to innovate to remain in the market place (Röling, *et. al.*, 1998). Support strategies and models have to evolve accordingly. An extensive literature review on the evolution of models and philosophies used in agricultural development is therefore warranted. This chapter focuses specifically on South African small farmer development. International information and analysis is also used to provide intellectual and theoretical perspectives. The role of agriculture in economic transformation is analysed and the evolution of agricultural development theory and practice and its influence on the South African policy evolution investigated. The diverse nature of the South African agricultural sector is highlighted and the relevancy of dealing with diversity in development planning stressed. The notion that small-scale farmers have difficulties in competing, either in the local, regional or international market, mainly due to a lack of support systems and inhibitive costs, is also investigated.

## 2.2 Agriculture's role in economic transformation

### 2.2.1 International perspective

Throughout the past 50 years, the seminal work of Johnston and Mellor (1961) has guided thinking on the role that agriculture can play in the process of economic development. These authors argued that agricultural transformation is an economic development process by which a predominantly rural and agricultural economy is transformed into a predominantly industrial, service orientated one, with the objective of increased wealth, equity and stability.

Agriculture contributes capital and labour to the broader economy, which supposedly could use it more productively. It further contributes foreign exchange earnings through exports as well as a market for consumer goods, services and industrial goods (i.e. inputs). Many development successes entail agriculturally based transformation, as certain agricultural functions are essential for economic development (Johnstone & Mellor, 1961; Mellor, 1979; Mellor, 1986; Staatz & Eicher, 1990; Mundlak, 1997). Agriculture is therefore fundamental to world economies, also because more than 60% of all people are rural and require rural employment (Staatz & Eicher, 1990; Binswanger, 1994; Mundlak, 1997).

Although economic growth is essential, it is not sufficient to ensure improvement in well- being. Facilitating participation in development is crucial if rural people are to share in the benefits of economic growth (Johnson, 1994). Economic transformation therefore focuses increasingly on Human Capital Development (HCD), broadly defined as expanding choices and the ability to react to change (Mellor, 1986; Timmer, 1988; Eicher & Staatz; 1990; Ngqangweni & Van Rooyen, 1998). Human capital development can be defined as adding value through improved ability to identify and deal with constraints. It is targeted as a cornerstone for sustainable rural development and deals with skill improvement through education, training or experience (Evenson, 1989; Van Zyl & Van Rooyen, 1995).

As HCD is crucial for agricultural growth and development, its neglect would often feature in development failures worldwide. Various studies, also from South Africa, illustrate the economic value of HCD in enabling efficient resource use and productive farming (Eicher, 1988; Evenson, 1989; Van Zyl & Van Rooyen, 1995; Sartorius von Bach, 1996; McCalla, 1999). Low farm earnings and poverty could therefore be explained to a significant extent by low investment in human capital and thus development.

### 2.2.2 Linking poverty and transformation:

Discussing development would be incomplete without defining poverty. In contrast to development expanding choices, poverty is primarily about lack of choice and inability to take advantage of opportunities (Hayami & Ruttan, 1985; Kirsten, 1997; Shariff, 1998; McCalla, 1999). Poverty is created and perpetuated by closely linked socio-economic processes. Lack or denial of access to resources, unsustainable population growth, drought, war, exploitative markets, weak governance and vague property rights pauperise many communities (Chambers, 1980; Kirsten, 1997; Shariff, 1998). Poor people often lack adequate food, shelter and education. They are vulnerable to health problems, economic dislocation, and natural disasters. They are also often exposed to ill-treatment by state institutions and society (Chambers, 1983; Mellor, 1985; Shariff, 1998; McCalla, 1999).

The empowerment of poor people - by making state and social institutions more responsive to them is the key to reducing poverty. Enhancing security by reducing the risk of events such as disease, economic crises or natural disasters is also crucial (www.worldbank.org/html/extpb/index.htm). The International Fund for Agricultural Development (IFAD) warned during 2001 that a global commitment to cut poverty by 50% by 2015 is bound to fail. This is due to the misconception that poverty in developing areas is urban-based: Three quarters of the world's poor still live in rural areas and depend primarily on agriculture and related activities. Investment and assistance should therefore be focused on agriculture, the basis of survival for the poor. Agriculture, in terms of international development co-operation and domestic resource allocation, must be redressed if poverty targets are to be achieved (Deen, 2001). Predictions are that poverty is increasing, with farmers becoming more resource poor (Hayami, 1985; Eicher, 1992; Delgado, 1998; Shariff, 1998). Throughout history poor labourers having no property rights have been pauperised relative to the property owning class. Effort must therefore be focused on labour demand and

remuneration expansion. Two obvious fronts are agriculture and small industries (Hayami, 1985; Brand *et. al.,* 1992; Van Rooyen, 1997). Agriculture is therefore correctly seen as the engine for broad-based economic growth (McCalla, 1999).

While in per capita terms, the RSA is an upper-middle income country, the majority of its population experience poverty or are vulnerable to it (May, 1998; McDonald & Piesse, 1999). The country is characterised by unequal health and educational services and restricted access to services, especially in rural areas. Income distribution is largely racially distorted and ranks as one of the most unequal in the world. South Africa's income GINI-coefficient has twice (1975 and 1991) been estimated at 0.68, which is of the highest ever recorded. Some 30 to 50% of the rural population have insufficient food and are exposed to a poor diet as a result of low income (Makhura & Kirsten, 1999). More than 40% of the population live below the poverty line (Le Roy *et. al.*, 2000). According to Cousins (1998), up to 70% of rural people have an income of below R300/month, making the majority of ruralites food insecure.

Approximately 70% of SA's poor live in rural areas, and about 70% of ruralites are poor. The rural economy is not sufficiently vibrant to provide them with remunerative or self-employment opportunities. The cost of living for poor rural people is generally higher than for their urban counterparts and they spend relatively more on basic social services such as food, water, shelter, energy, health, education, transport and communication (Van Rooyen, *et. al.,* 2001).

The logical consequences of poverty include a lack of confidence, resulting from the inability to sustain livelihoods. Aggression, mistrust, crime and apathy are other results described by scientists. Rural poverty often is a web in which a lack of assets, little income and food, weakness, isolation and vulnerability to contingencies, all interlock (Adendorff, 1996).

A key option in alleviating poverty is through economic growth. The proverbial engine for rural economic growth and transformation, according to the literature, is agricultural development. However, despite many examples of highly productive agricultural systems and a variety of technologies development progress in SA is limited. It is therefore argued that agriculture in SA has only a limited capacity in addressing poverty. However, this perception does not recognise a crucial avenue of growth; integration between smallholders and the agribusiness supply chain. As stated, the focus of this study is the investigation and subsequent redesign of the project approach, to link production to agribusiness, as vehicle to address poverty and achieve agricultural transformation and growth.

### 2.2.3 The transformation process:

Agricultural transformation or economic development is a continuing process characterised by a general income increase, a declining share of the labour force in agriculture, and a declining agricultural share in the GDP. Usually government plays a key role in the process, by way of policy setting and active

intervention (Timmer, 1988), but theories regarding economic development and the role of the agricultural sector in this process have changed considerably over the past 50 years.

However, agricultural development forms an integral part of the broader economic development process, a challenge of particular importance in South Africa today. Economic development theory has evolved in terms of how its goals are defined, and through macro-economic factors such as the mechanics of growth, the definition of capital, the relative roles of the state and the market, as well as the nature and interventions of governments. This evolution is presented graphically by Meier en Stiglitz (2001) in figure 2.1.

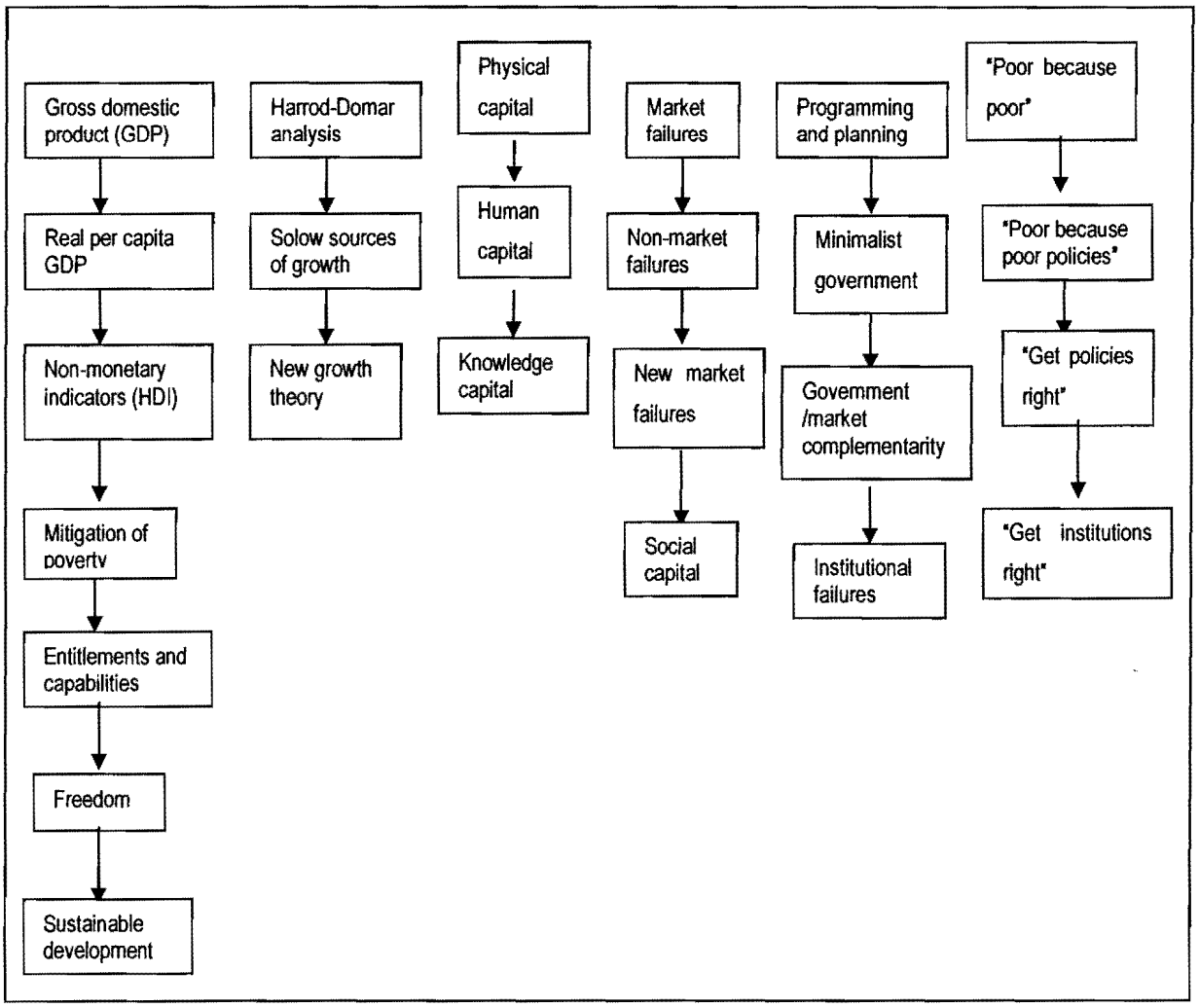



Figure 2.1: The evolution of agricultural development (Meier and Stiglitz, 2001)

While this linear representation summarises the main features of development history, economic development is not a linear process. Adelman (2001) consequently argued that such a representation could lead to the fallacies that 'underdevelopment' has a single cause and that 'progress' in development

can be measured by a single criterion. Still, whilst accepting its shortcomings, this figure does provide a broad description of the main development philosophies of the past 50 years.

Having accepted the complexities of development, what is clear is that economists in general did not appreciate agriculture's role in the broader process of economic development, even though earlier theories partially recognised its importance. Rostow (1960) for example, regarded agriculture as a resource, arguing that agricultural development was a precondition for broader development (as a third of five theoretical stages of development). His growth stage model was one in a long line of similar models, documented since the 19th century. Karl Marx also contributed to this debate, arguing that the 'path of development ran from primitive, over communism, ancient slavery, medieval feudalism, industrial capitalism, to socialism', in a process driven by the forces of conflict between socio-economic classes (Vink & D'Haese, 2002).

Growth stage theories generally regarded development as a process measured in increasing capital income, achieved by replacing activities with low labour productivity (i.e. agriculture) with activities with high labour productivity, in a series of steps. In contrast, structural change models viewed development's path as a more continuous process. Growth was regarded as a 'set of interrelated changes in the economic structure' enhancing the economy's transition from traditional to modern (Vink & D'Haese, 2002). Lewis (1954) described the best known of these theories. In his view the main function of agriculture in the initial development stages was to provide surplus labour and capital to the industrial sector, and to earn foreign exchange. In a latter stage it would provide cheap food to urban workers and a market for produce from the manufacturing sector. He also argued that large estate type farms would be desirable in early development stages, to be followed by large owner-operated farms in latter stages.

Growth stage theories largely neglected the potential contribution of agriculture to development. Decades of theorising followed regarding the manner in which development could be stimulated through the manufacturing sector. Yet the contribution of agriculture could not be ignored for at least three reasons: Firstly, appropriate development strategies are dependent upon the context within which they are implemented. As development is often initiated in rural areas (where most of the poor reside), the agricultural context is relevant. Secondly, the role of the state (willingness, capacity) or the market in structural change is vital. It can be argued convincingly that both the state and the market are weaker in rural areas. The third reason is the multiplier effect of farmers' earnings and those of workers in the food processing industry spent on consumer goods (Vink & D'Haese, 2002).

During the 60s and 70s economic theory was challenged by analysts who hypothesised that the lack of development was a result of ruthless expansion of capitalism (Dos Santos, 1970; Furtado, 1973; Galtung, 1971; Sunkel, 1973). These authors argued that developing countries were made dependent through the international capitalistic system. Unequal exchange with the industrialised world and the repatriation of profits from foreign-owned business made third world growth unsustainable. This view is still held by certain scholars today (Hyden, 1980; Linear, 1985; Wisner, 1989; Isbister, 1991; Brown, 1995) who favour

a more socialistic development approach instead of the capitalistic one used in many developing countries. Although their conclusions are open to interpretation, these scholars made important contributions to the understanding of the relationship between local agriculture and the world economy. They pointed out that the typical under-developed country does not exist, as extensive household and regional diversity is evident. They also stressed a holistic view of the wider economy and stressed the importance of participation, linkages and exchange arrangements within communities. In economic relations between high and low income countries, they highlighted the fact that benefits are not easily distributed equally without political manipulation (Staatz & Eicher, 1990). These scholars' contributions also highlight the importance of recognising diversity and the need for linkages, the basis of this study's hypotheses.

Ashley and Maxwell (2001) also provide a graphic representation of the changing views on rural development (as reproduced in Figure 2.2). In their view the Green revolution in Asia during the 1960s was associated with state investment in the infrastructure required for agriculture as well as in research and extension. Budget priorities shifted towards the social investments required for IRD programmes during the 1970s while the structural adjustment programmes of the 1980s turned attention back to the market as instrument for development. Eventually, the Washington Consensus on food, agriculture and rural development during the 1990s resulted in a more balanced view of the roles of state and market and of investment in productive sectors vs. investment in social sectors (Vink & D'Haese, 2002).

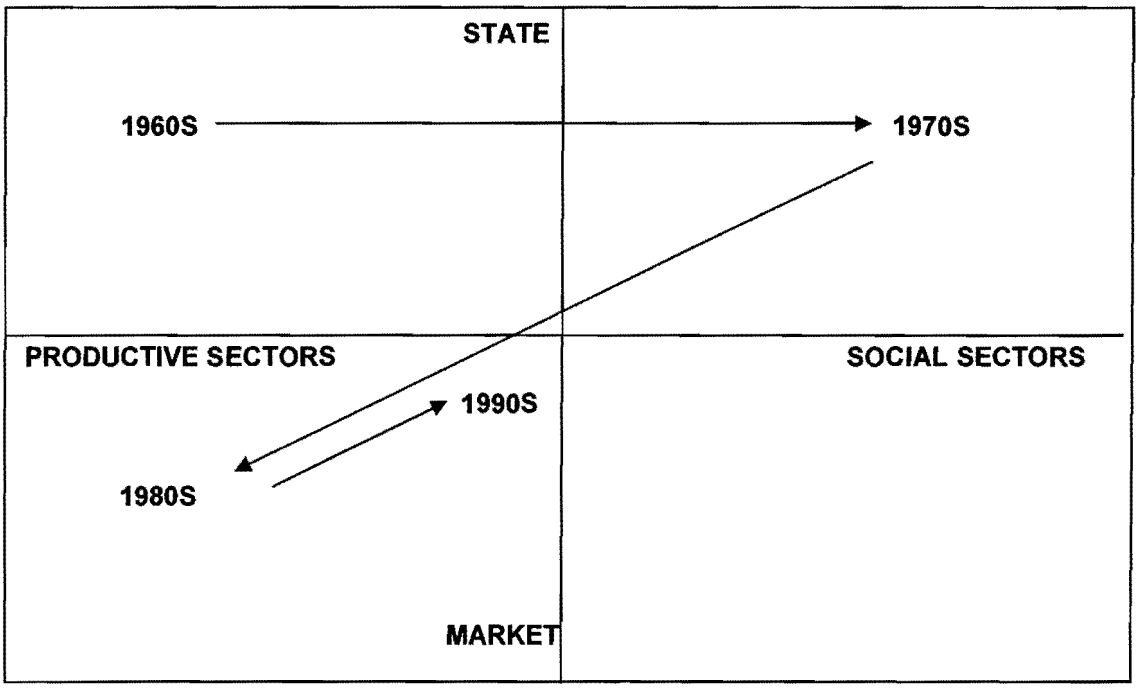



Figure 2.2: The evolution of rural development theory and practice (Ashley and Maxwell, 2001)

Whilst the Ashley and Maxwell model illustrated in Figure 2.2 provides a logical presentation of the theories involved, agriculture's role is in practice not always that clear. These authors cite four reasons why agriculture does not always fulfil its envisaged role:

1 Many positive agricultural effects depend on increased small farm production to ensure distribution of benefits and increases in demand for food products:
2 World commodity prices have been falling for decades, with no sign of reversal. This undermines the profitability of primary agricultural production.
3 Agriculture is extending the limits of the available natural resource base worldwide, placing sustained growth under threat.
4 In certain dynamic rural economies, production has been diversified out of agriculture, thus other sectors are playing a role normally associated with agriculture.

Although agriculture's share of output decreases during transformation, the concept of agricultural demand-led industrialisation is widely accepted (Lewis, 1954; Johnston and Mellor, 1961; Mellor, 1979 & 1986; Timmer, 1988: Hayami, 1985; Deen, 2001). This is based on multiplier effects between food supplies, rural purchasing power and labour and capital linkages, typically found in the South African economy (Van Rooyen & Machete, 1991; Eicher, 1999; Vink, 2000; Van Rooyen, *et. al.*, 2001; Poonyth, *et. al.*, 2001). Public rural investment and supportive agricultural policies are therefore required (Deen, 2001).

The transformation of agriculture could be attempted through three strategies (Staatz & Eicher, 1990): The first is the typical free market approach, with limited, if any intervention. This strategy has a high political cost, as it implies limited state support, making it potentially unpopular with a relatively poor electorate. A second strategy is integrated rural development, where government plays a major role in strategic design and programme implementation. This direct approach has high managerial and administrative costs. The third 'price and market' policy approach entails that government intervenes only with regard to the outcome of domestic markets, not through direct intervention, but rather by facilitation. This strategy has high analytical costs, since a continuous study of markets is needed to ensure sound implementation. However, no single approach makes sense for all countries (Staatz & Eicher, 1990), but the three approaches mentioned deal with investment in infrastructure, research and human capital development with different emphasis, depending on the situation. Political objectives are also inevitable and necessary to facilitate transformation. Economic development or transformation therefore requires a diverse focus, from basic input supply to emphasis on the activation of linkages and multipliers.

Ultimately, development strategies must focus on flexible delivery systems and employment as agriculture has a role in economic development and must be stimulated at various levels. Given the wide variety of conditions in South African agriculture, an effective but diverse policy framework to cater for all groupings is required to achieve economic growth and social welfare. This supports the first hypothesis of this study, that diversity must be quantified and dealt with in effective agricultural support. Activation of linkages,

streamlining of marketing and promotion of integrated economic systems, all support the second hypothesis of this study, that integration of stakeholders is required for agricultural growth.

### 2.2.4 Unique South African development features

Although rural South Africa shares many characteristics with other developing countries, some features and development challenges are unique. The country's demographics reflect its past policies: Many rural people are migrants working and living in urban areas, struggling to maintain rural family and social ties. As a result, the rural-urban continuum takes a particular form: As in many countries, much of South Africa's rural space is sparsely populated. The rural manufacturing base is weak due to poorly developed infrastructure and linkages to markets. Local governments have a small tax base and weak human capacity. Agriculture and other natural resource based activities, although not well supported, provide a basis for many livelihoods (Van Rooyen, *et. al.,* 2001). A unique feature is that most rural livelihoods depend heavily on non-farm incomes and remittances from urban industry and mines (D'Haese, 1995; Wonderchem, 1997; Modiselle, 2001). As a result of urban economic opportunities, the resulting migration patterns and strong tribal and family linkages between urban and rural areas, more capital flows into poor rural areas than in most other developing countries. Movements of people include temporary or permanent labour migration, including weekly and daily commuting and importantly the movement of resources (remittances), commodities (inputs, produce), and services (information) (Van Rooyen, *et. al.,* 2001). Adding a relatively strong social welfare system, the reliance on agriculture to survive is less strong than in other developing countries.

Given the diversity in the agricultural sector, it could be argued that if the South African economy had followed a different development path, rural poverty would not have become such a pervasive feature of rural life (Van Rooyen, *et. al.,* 2001). As discussed, economies generally grow by shifting human and capital resources from agriculture into the industrial sector and subsequently into the services sector. This has also been the case in SA, where the transition to a post-industrial age is in progress. Yet there is compelling evidence that during this process, the primary sectors either failed to achieve their full potential or did so in such a distorted manner that large numbers of people were excluded from the benefits of modernisation. Local commercial agriculture has followed too extensive a capital-intensive growth path while significant agricultural potential lies untapped in the former homeland areas. The growth prospects of African farmers were suppressed, through exclusion from the rural land market, and when commercially viable farming became, by definition, almost impossible in homelands (van Zyl *et. al.*, 2000a).

Recent observations indicate that current support systems for smallholder agriculture in the previous homeland areas are collapsing or have been reduced significantly (Singini and van Rooyen, 1995; D'Haese, 1995; Wonderchem, 1997; Vink, 2000; Modiselle, 2001). Furthermore, the growth path followed in SA has meant that industries related to agriculture (input provision, food processing and fibre) were stunted and urban-based, thus depriving many rural people of economic opportunities. Examples of this

bias included skewed infrastructural provision in favour of white commercial farming areas, and suited only to the needs of a highly controlled policy environment, including the agricultural marketing system. Rural people generally do not have access to productive and appropriate technologies to support their subsistence. Population pressure in these societies has also depleted the natural resource base to such an extent that only a small number of rural households can provide for their subsistence needs from it (Van Rooyen, *et. al.,* 2001).

Whilst the contribution of agriculture to the South African economy is significant, it also has vast potential for stimulating equitable economic growth, if prospects of small farmers could be enhanced. The sector represents 1.28 million jobs (roughly 11% of formal employment opportunities in the country). Presently, more than 12 million people, the majority being poor, are dependent on rural production (DSI, 1999b). Primary agriculture accounts for 4.5% of the gross domestic product (GDP) of SA while the larger agro-food complex accounts for another 9%. The predominantly white commercial sector (roughly 50 000 farmers) exported about R16 billion worth of products during 2000 - nearly 10% of South Africa's total exports. Farms provide livelihoods and housing to ± 6 million family members. There are also 240 000 small farmers who provide a livelihood to more than a million family members and occasional employment to 500 000 people. Furthermore, an estimated 3 million ruralites in communal areas are to a limited extent agriculturally active. Finally, the productive activities of rural towns are centred on their support to agriculture and related activities, such as agri-tourism and game farming. Roughly 40% of the country's total population is primarily dependent on agriculture and related industries (Anon., 2001b).

Agriculture, including all related economic activities; i.e. input provision, farming and value adding, therefore constitutes an important sector in the economy despite its relatively small direct share of the total GDP. Its contribution is consistently under-appreciated when measured directly as an input to GDP (Nomvete *et. al.,* 1997; Eckert *et. al.,* 1997). Approximately 27% of all industry turnover and 28% of its employment is dependent on agricultural outputs (Anon., 1998a). The consumption of its products constitutes the largest share of private consumption expenditure at 32% (Van Rooyen, Carstens & Nortje, 1996; Van Rooyen, 1998). The significance of agricultural linkages (interactions between economic sectors) and multipliers (through increased employment and income) is illustrated by nine of the top ten employment creating industries in SA being found in the agricultural or agri-business sector. Empirical analysis also shows that agriculture is one of the largest employment multipliers per Rand invested throughout the economy. An investment of R1 million in the agricultural sector creates twice the number of jobs than the manufacturing sector. In the aggregate, agriculture's contributions to job creation, value added and government revenue significantly exceeds those of the non-agricultural sectors (Van Zyl & Vink, 1988; Van Seventer *et. al..,* 1992; Anon., 1998c; Van Zyl & Vink, 1988; Eckert *et. al.,* 1997; Nomvete, *et. al.*, 1997; Van Rooyen & Sigwele, 1998). These insights highlight a contrast with the reductionism developmental approach, which views investment in agricultural services and support systems as inherently in competition with industrial and/or urban investment (Van Rooyen, 1998).

Despite its valuable contribution, agriculture in SA has in general not yet fulfilled its potential as a catalyst for economic development, suggested by international comparisons. Many middle-income countries with similar economic profiles have approximately three times higher agricultural contributions to GDP (Van Rooyen, 1991; Swart, 1996; Lipton *et. al.*, 1996). Comparing the performance of developing countries shows that in 17 of 23 countries where the agricultural rate of growth exceeded three percent, overall GDP growth rates were higher than 5% (Van Rooyen & Machete, 1991). Although inhibitive climatic conditions in the RSA could play a role, the significant impact of adaptive research, technology development and management practices in some highly competitive countries with similar conditions, highlights the importance of support strategies (Low, 1995). The semi-arid resource base of SA is in fact not untypical of comparable countries (Lipton *et. al.*, 1996). High urban unemployment, a large rural population, a largely unskilled labour force and unequal income distribution also indicate that agriculture should play a more important role in the economy. Unless jobs are created in agriculture, the chances of broad-based growth are slim (Van Rooyen, 1991; Swart, 1996; Lipton *et. al.,* 1996).

The impact of the AIDS pandemic although still largely unknown is expected to alter rural demographics in SA significantly. The UN Food and Agriculture Organisation (FAO) in their 2001annual report, state that recent studies indicate a 50% reduction in agricultural output by African smallholders over the past five years, mainly as a result of AIDS. In SA the pandemic is the number one health problem, threatening rural communities and representing a major development impact. Some authors argue that HIV-AIDS is devastating SA; in 2002, more than 5 million citizens were HIV positive. It is estimated that a quarter of the adult population between ages 20-29, is currently HIV positive. The life expectancy of 68 years is likely to drop to 48 by 2020 (Forgey *et. al.*, 1999). The already affected labour force will suffer further decline: -18% by 2005, -26% by 2020 (see Department of Health, Medical Research Council, and USAID websites). In rural areas, the combination of poverty, migrations from highly infected areas (mines), uncertainty and disempowered women facilitate the transmission of HIV. Illness further increases the risk of becoming impoverished (death, pension loss, job loss, weakened labour force for farming activities, etc.

HIV/AIDS is likely to significantly reduce productivity and earnings as it impacts on wage and remittance earners. Besides losses in investments in education due to death or disability, it is becoming common for children to miss school in order to take care of the ill or to perform household duties. Apart from medical and funeral costs, households are subjected to losses of income and skills, forcing rural households to access savings, sell off assets and incur debts, increasing the vulnerability of survivors (NDA, 2001). Households are increasingly becoming female-headed (Van Rooyen & Nene, 1996), with less access to productive assets (Buvinic & Mehra, 1990; Van der Vyver, *et. al.*, 1992). The rural elderly also increasingly have to shift roles from dependants to providers. The increasing numbers of orphans and children-headed households indicate a failure of extended families and other social safety nets to cope with the demands of the pandemic. HIV/AIDS therefore critically affects the social capital of rural areas (Bos and Leutscher, 1995; Health Systems Trust, 2001). Numbers of economically active people (projections vary from 20 to 50%) therefore will become inactive during the next decade, creating a decrease in average household income. The need for agricultural growth is actually more urgent as a

result of these expectations. Marginal existence, low income and restricted access to resources will characterise many rural areas even more. Agriculture provides a potential for development in these areas through food and fibre production, income and employment linkages (Van Zyl & Vink, 1988). To stimulate rural development through agriculture must be considered a strategy for rural survival and growth.

### 2.2.5 South African development strategies

Agriculturally related policies of the previous century in SA, entrenched by the 1913 Natives Land Act and various subsequent laws severely inhibited the development of a viable small-scale farming sector (Molatlhwa, 1976; Chikanda & Kirsten, 1998). Support was allocated primarily to the commercial, white sector. For the African sector the primary consideration was demarcation of separate land. Public agricultural support for small-scale farmers was initiated with the well-known 'Tomlinson report'. This report of the commission for the socio-economic development of the Bantu areas within the Union of South Africa was tabled in 1955. Although it's major recommendations related to small-scale agriculture were largely ignored by the government of the day (Van Rooyen, 2000), its influence could be seen in many subsequent programmes applied in the homelands (Van Rooyen & Nene, 1996), and in Bophuthatswana since 1972 (Worth, 1994). The report's recommendations represented a first development strategy for small-scale farming in SA. Its series of economic investigations was the most comprehensive factual survey until then and dealt with farming systems and financial results in the resource poor and densely populated homeland-areas.

In its recommendations, aimed at establishing a "middle class" of full-time, economic viable farmers, the 'Tomlinson report' suggested that a comprehensive, integrated farmer support system be implemented to allow small-scale farmers access to increased farmland, markets, financial support and quality extension. These recommendations support the hypothesis that integrating the small-scale sector with stakeholders in the industry is required for agricultural development. However, the focus of the government of the day was on developing the 'homelands' as separate entities, mainly to serve as labour pools for commercial agriculture and industry (Van Rooyen, 2000). The Tomlinson commission recommended a "developmental state" where economic forces would dictate development and growth paths. Because this philosophy did not suit government's policies to promote separate development, most of its recommendations were rejected (Van Rooyen, 2000). Potentially beneficial recommendations were largely reduced to rural land use planning and provision of some infrastructure for small farming units (Bembridge, 1988; Van Rooyen, 1993; Van Rooyen & Nene, 1996).

Ironically, most of the Commission's rejected recommendations are implicitly recognised as crucial today. Despite the completely changed socio-political landscape of South Africa, increased access to land and land tenure reform is still highly relevant. Other recommendations included access to a range of support services to enable economically viable farming; joint ventures and business partnerships; development investment in infrastructure and capacity development. These aspects are currently receiving attention to

stimulate rural development and economic growth (Van Rooyen, 2000). A focus of the Tomlinson report was access to services and joint ventures. This constituted the first indication of integrating services through a project approach. Other recommendations promoted by the report included 'Economic Farming Units' and a 'middle class' farmer group. These were the initiations of a project approach that evolved into the model for development in the homelands during the seventies. The concepts of a 'farming middle class' and 'progressive agriculture', which became the basis for most development actions in Bophuthatswana, also originated from the Tomlinson commission's report. An unpopular recommendation with traditional authorities at the time was a proposal for land allocations, which was directly against the practice where land was allocated as a right and no distinction was made between full and part-time farmers and also non-farm land use (Molatlhwa, 1976). Land allocation was not linked to farming skills.

South African development trends during the 60s relate to the international experience. The focus became technical innovation to improve agricultural practices and provide jobs. A technocratic approach was implemented whereby developing areas (homelands) were targeted for large-scale interventions. These took place under the auspices of 'homeland'-based development agencies, corporations or agricultural parastatal companies. The centrally managed, capital-intensive project approach, also called 'disciplined' farmer settlement or betterment planning, became the mainstay of agricultural development in SA until the late 1980s. It aimed to provide employment in homeland agriculture and increase production. It was argued that expatriate management and modern technology (i.e. Green Revolution techniques) were required to modernise farming. The main objective was to guide selected farmers towards 'full time' commercial producers, through centrally managed support and access to farming resources. The Sheila case study describing the system in detail will be dealt with in chapter six.

In SA, as in other developing countries, many schemes based on the project approach failed. Reasons include inappropriate technology, which farmers often rejected to minimise risk, inadequate infrastructure. A lack of support and political interference also contributed (Bembridge, 1986c; 1988). The project approach is elaborated upon in chapter three.

During the middle 80s and early 90s international focus was on macro policy reform and structural adjustment, food security and employment generation. The complexity and long time frame of development was recognised, facilitating the emergence of realism regarding development expectations. No longer was a 'quick technological fix' viewed as the sole solution. The failure of development approaches through technocratic projects encouraged support for a more participatory approach (Röling, 1988; Chambers, 1993), which in SA provided momentum for an approach introduced by the Development Bank of SA (DBSA) during 1987. This Farmer Support Programme (FSP) was built on the assumption that rural producers act economically rationally if support services are available within a systems context (Van Rooyen, *et. al.,* 1987; Singini & Van Rooyen, 1995). This demand driven approach focused on selected target areas and integrated institutions into a multi-disciplinary support system. Central management was not encouraged, support not exclusively to 'full time' producers and economic farm size *per se* not critical. Where possible participants were screened, but this did not constitute a

participation barrier as the focus was on inclusivity rather than exclusivity. The approach was directed at supporting 'homeland' producers to achieve efficient income through improved access to resources and services (Van Rooyen, *et. al.,* 1987). The FSP elements of support to a selected group, in a systems context and within a multi-disciplinary approach, show similarities with the project approach, although participative procedures were more prominent in the FSP approach (Singini & Van Rooyen, 1995).

The programme contributed to confidence amongst participating farmers and had significant value as investment strategy for promoting economic production, participation and access to a broader range of options (Singini, *et. al.*, 1992; Singini & Van Rooyen, 1995; Adendorff, 1996). Criticism included limited focus on decreasing risk, food security, diversity (recognising different categories of farmers) and sustainability. Although commercialism was an objective, broad-based access to farming services to increase productivity and welfare was the main aim. The appraisal process in FSP projects required a positive cost-benefit position. This should remain an element of future strategies, particularly if the focus on integration (multi-institutional co-operation) and access to support is combined in a revitalised project approach with emphasis on participation.

Participatory Rural Development became the focus of the nineties, also in South Africa (Carruthers & Kydd, 1997; Auerbach, 1998). Importantly, it was recognised that farmers are not homogeneous and that diversity exists in agricultural communities, supporting a hypothesis of this study. Through recognising a range of farming systems and household diversity, farmer groups could be supported more effectively. Integrated Rural Development (IRD) also reappeared recently, geared to address situations where capital, skills and thus employment opportunities outside agriculture are limited. It puts the emphasis on poverty eradication through meeting the basic needs of a rural area, through an increase in agricultural production (Mazambani, 2001).

Co-ordination, linkages and vertical integration, not only of role-players but also of objectives are key aspects of IRD. Similarities to the project approach, as described in the previous section, are found: It is a multi-dimensional process aimed to improve access and rural livelihoods. A typical IRD programme focuses on an area to ensure an integrated, holistic programme. It utilises linkages, partnerships and strengthened institutional capacity as well as community-based institutions (Mazambani, 2001). While a significant benefit of the IRD approach is its recognition of the interdependence of rural activity and the need for a holistic approach, its complexity often renders it unpractical in reality (D'Haese, 1995). However, elements of the approach are useful in a rural development strategy as it argues for a broader view of agriculture within the rural environment.

### 2.2.6 Policy evolution towards a growing and equitable agriculture:

#### 2.2.6.1 Broad policy framework

Of interest is how the evolution of development philosophy impacted on agricultural strategy, as agriculture is embedded in the broad political and economic scenario. To analyse agriculture, the policy and economic framework within which it operates, must be understood (Eckert, 1991). Policy deals with a statement of direction (Hornby, 1974) and is described as an overall plan embracing the goals and procedures of a government (Webster, 1973). Participation of those involved is beneficial (Ham & Hill, 1993). Three approaches to policymaking can usually be identified, according to Bates (1981). The first deals with maximising social welfare with policy being a set of choices to secure society's best interest. Secondly, policy could be a bargaining outcome from pressure groups, where a lobby process directs policymaking. A third approach is where policy is used to retain political power i.e. where government targets benefits to supporters. If the aim is to maximise social welfare, government is usually more willing to listen to contributions that will positively influence the economy - especially if the issue of equity and distribution of wealth is a real consequence of a proposed policy change (Schmid, 1989). However, policy is sometimes an attempt at solving a political problem. What is economically called bad policy is not always the result of poor training or other deficiencies (Tisdell, 1985; Schmid, 1989), as political costs must be taken into consideration (Bates, 1981). In South Africa, the dramatically changed political framework required new policies. Participatory macro-economic planning took place in SA after 1994 and public policy reform was shaped through a public consultation process (Nomvete, *et. al.*, 1997).

The policymaking process in South Africa is driven by society welfare considerations and the selected economical model for South Africa can be described as socially responsible capitalism, expanding access and equality (Eckert, 1991; Nomvete, *et. al.*, 1997). A major aim is to achieve rapid economic growth, with equity: facilitating improvement in the quality of life, particularly those previously disadvantaged. Major policy initiatives indicate that SA's main economic and social problems, unemployment and poverty, are to be addressed by encouraging a vibrant, rapidly growing economy aimed to narrow the gap between rich and poor (Eckert, 1991; Van Rooyen, *et. al.*, 1994; Nomvete, *et. al.*, 1997). Equality in distribution of growth is addressed through various levels of government intervention. Analysts believe that rapid, equitable growth and poverty decline can be achieved simultaneously (Eckert, 1991; Van Rooyen, *et. al.*, 1994; Nomvete, *et. al.*, 1997).

During the first six years after democratisation (i.e. 1994 to 2000) efforts of the Reconstruction and Development Program (RDP) and the subsequent Growth, Employment and Redistribution Program (GEAR) intended to redress inequalities. The RDP prioritised reduction in poverty and inequality through revival of economic growth, human capital development and ownership to achieve growth with equity. Legislation was passed to alter prohibitive institutional arrangements and discriminatory practices (Van Rooyen, 2001). The GEAR has as premise that job creation addresses poverty, while economic growth is required for employment opportunities. Growth is to be achieved through increased exports and foreign

investment as well as responsible economic policies and social stability (Eckert, 1991; Nomvete *et. al.*, 1997; Swart, 1996). Competitiveness as well as tight fiscal and monetary policy is required. Trade policy was re-orientated towards exports and global markets. This was also influenced by the General Agreement on Tariffs and Trade (GATT), and globalisation, which dominates international trade. The GATT commits signatories, including SA, to replace quantitative import controls with tariffs, to reduce these over time, and to reduce levels of domestic support (Anon., 1994; Swart, 1996).

Globalisation has been proven to benefit developing countries. In analysis of 34 developing and developed countries, growth rates of globalising countries were 30-50% higher than in countries reluctant to globalise. Trade allows optimal resource utilisation through efficient imports, while the consequent loss in employment is usually temporary (www.worldbank.org/html/extpb/index.htm). Since exports have a higher labour: capital ratio to imports, trade reform is expected to enhance employment in SA. Depreciation in South Africa's currency has also aided liberalisation and therefore profitability of tradables (Nomvete, *et. al.*, 1997). Analysts agree that although GEAR contains most requirements to improve competitiveness, privatisation and creating confidence, these need further attention. The labour market, characterised by unemployment, strong unions and relatively high wages, inhibits growth and a more absorbing labour market is required. Government however, argues that a relatively low wage labour market is avoided on strategic grounds, given SA's distorted economic background (Erwin, 1998). However, on the grounds of enhanced trade opportunities, equity and food security, it is argued that SA's agriculture would benefit from the GATT (Anon., 1994; Binswanger, 1994).

Another policy shift has recently taken place: the major theme of the 'State of the nation' address by President Mbeki in 2001 dealt with transformation and a shift from macro considerations to micro applications. This is in tune with international trends (Carruthers & Kydd, 1997). President Mbeki stated that macro-economic balance and stability has been established and that international competitiveness has fundamentally improved. Attention to critical micro-economic issues is required while efficiency, employment, poverty and inequality should be addressed. Lower input costs throughout the economy should be an aim. The President targeted specific sectors for their significant potential to contribute to growth and job creation, including agriculture, tourism and certain export sectors, including agro-processing. Recognising the driving force of technological advances and innovation, investment in research and development is a focal point. The 2001 financial budget speech reiterated the progress with macro-economic stability and fiscal consolidation and announced the next phase of economic reforms: He also stated that the new focus would be on infrastructural and agricultural development and market access. This is developed further in the agricultural sector plan described in 2.2.6.3. On a macro-policy level it can therefore be argued that a facilitating policy environment for economic agricultural development has been created.

### 2.2.6.2 Agricultural policy directives

A broad professional consensus entails that an agricultural focus is a priority for growth and development in SA. This constitutes an efficient strategy, most likely to reduce poverty (Bembridge, 1988; Binswanger, 1994; Deen, 2000). Whilst substantial evidence exists for effective investment in agriculture (Binswanger, 1994; Pretty, 1995; Lyne, 1996; Anderson, 1996; Swart, 1996), development policy during the nineties did not recognise agriculture as a main engine for growth (Nomvete, *et. al.*, 1997; Van Rooyen. & Esterhuizen, 2001a). The RDP scantily referred to agricultural issues (Van Rooyen, *et. al.,* 1994; LAPC, 1995). However, major policy initiatives did evolve during this period. The White Paper on Agriculture (1995) gave guidelines regarding land distribution, services and infrastructure, broadening of access to services and resources and food security. Food security became a priority as nearly 50% of the population lives below the bread line (Van Zyl & Kirsten, 1992; Anon., 1994). Since the mid-1980s policy shifted from self-sufficiency towards food security, requiring increased purchasing power and food production (Mellor, 1988; Anderson, 1996). Food production increases are predicted, provided that participation of the poor is achieved (Mellor, 1988; Van Rooyen & Sigwele, 1998). Although increased demand is expected, given the impact of recent low growth and the AIDS pandemic, annual increases in food demand of below 2% are expected (Van Rooyen, Ngqangweni & Frost, 1996).

Several agricultural policy reforms to reverse discriminatory legislation and improve participation have taken place, and major deregulation also took place to liberalise the sector during the eighties and nineties. This constituted a 'watershed' in agricultural support and impacted on policy regarding drought relief programmes, credit subsidies, tax breaks, etc. Single channel marketing boards were removed which altered marketing practices comprehensively. The main policy shifts included deregulation of marketing, the abolition of tax concessions, land reform, trade policy reform, and the application of labour legislation to the agricultural sector (Van Rooyen, *et. al.,* 1994; Backeberg, 1996).

Agriculture, with its potential to contribute to growth and job creation, is specifically targeted in the policy shift from macro considerations to micro applications. Infrastructural and agricultural development is to be the focus. The South African economy is today market driven and deregulated, with government intervention in distributing benefits, whilst the prospects for sustained agricultural growth are positive (Vink, 2000). The distinct shift from nationally based economies towards a world economy since the nineties must be recognised as an opportunity. This entails a focus on strategic alliances; supply chain agreements and specialisation. A transition from farm production driven business to embrace a consumer focus is required (Van Rooyen, *et. al.*, 2001). The agricultural sector therefore needs to adapt to function competitively in the global environment.

However, despite the many opportunities in the global market, the global economic market is highly unequal. The sophisticated protective measures of the developed world make it difficult for the SA producer to compete: For every R1 income received by farmers in South Africa, only 4 cents are directly or indirectly subsidised by government. In Canada, the USA and the EU, government subsidy received by

farmers entails 16, 22 and 45% of income respectively (Van Rooyen, Esterhuizen & Doyer, 2001). Trade barriers also negatively affect many developing countries in competing internationally. Agricultural subsidies are the most inhibiting issue for developing countries that rely heavily on commodity exports for much of their gross national incomes. While the developed countries annually spend $50billion in development aid, more than $300 billion is spend in agricultural subsidies by these countries. According to the World Bank, the extent of these subsidies in developed countries roughly equals the gross domestic product of sub-Saharan Africa, constituting a major drain on taxpayer money, whilst supporting over-production (www.worldbank.org/html/extpb/index.htm).

Despite trade barriers new opportunities to enter lucrative export markets do exist if innovative steps are taken. These include differentiated food and fibre products and the exploitation of niche-markets (Van Rooyen, *et. al.*, 2001). Externally manipulated factors, including trade agreements, labour regulations, crime and labour cost, cannot be controlled by individual farmers. However, product quality, production cost, managerial capacity, labour skills and business strategy can be influenced at farm level. Given a long-term decline in raw agricultural commodity prices, stimulating value-added activities could improve livelihoods among the rural poor. Furthermore, improved technologies throughout the production, processing and distribution chain as well as skills transfer, foreign capital and increased export earnings are required (Reardon & Barret, 2000). This could be addressed through innovative co-operation or integration between stakeholders, refocusing on consumer demands, integration and technology development. This emphasises the significance of the second hypothesis of this study; strongly promoting the integration of stakeholders.

Macro-level analyses of the extensive deregulation process shows that the South African agricultural sector as a whole has benefited from globalisation (Vink, 2000). Despite policy reforms unfavourable for the commercial sector, its productivity increased over the past decade as a result of more market-oriented policies (Backeberg, 1996; Anon., 1998c; Vink, 2000; Vink & D'Haese, 2002). Improved flexibility in input substitution is encountered, but less positive; there is a policy-induced bias towards capital-using technology (Vink, 2000; Deen, 2001). Growth throughout the adjustment period was positive due to expanding non-traditional exports. The competitive rating of SA's agriculture has shown a substantial increase since 1992. Established commercial farms invested in new equipment and shifted into more competitive products (Vink, 2000; Vink & D'Haese, 2002). As part of the adjustment, agriculture, like other sectors, did shed labour, thus adding to already high and rising unemployment. That adjustment was accomplished without a fall in aggregate output is a testament to the robustness and dynamism of commercial farming in SA. The rapid deregulation and liberalisation process did however expose the limited capacity of many farmers to adjust. Exposure to international competition caused many to leave the industry (Vink, 2000; NDA, 2001b), but generally the sector's performance has been increasingly competitive since 1992 (Van Rooyen, *et. al.*, 2001; Vink & D'Haese, 2002).

Small-scale producers in particular have trouble adjusting, since they were previously highly dependent on services delivered by parastatals, financed by non-commercial development programs. With the

termination of most development programmes, deteriorating infrastructure (e.g. mechanisation) and poor access to agricultural services became the norm. These producers do not have the financial capacity to absorb additional costs or adopt alternative technology (NDA, 2001b). However, from a strategic viewpoint a competitive emerging farming sector is critical. The plight of the small producer therefore justifies special support programmes for target groups in adapting to the deregulated market (Anon., 1994; Van Rooyen, *et. al.,* 2001; NDA, 2001b). Major rural development lessons learned since democratisation and deregulation underscore the need for integration and co-ordination of agricultural development activities directed at small-scale producers. This evidence forces decision-makers to reconsider the project approach. Especially co-operation and linkage principles continuously resurface (Van Rooyen, *et. al.,* 2001; NDA, 2001b). The project approach as potential support vehicle deals with requirements needed for increasing competitiveness and participation. It focuses on stakeholder integration and cost reduction through co-operative action, facilitating participative planning and implementation.

#### 2.2.6.3 Guidelines for the future: The Strategic Plan for South African Agriculture:

During 2001 agricultural policy reform became a priority, following the President's state of the nation address and his subsequent invitation to Agri-SA, the Agribusiness Chamber and the National African Farmers' Union (NAFU) to partner government (NDA) in drawing up a common agricultural perspective to which all could commit. This led to a comprehensive strategic plan of which the aims include a common vision, a framework to guide policy and implementation, investor confidence, competitiveness and partnerships among public, private and community stakeholders. The strategic objectives entail equitable access and participation in a globally competitive, profitable and sustainable agricultural sector. Priorities include transforming research, technology transfer and human capital development, integrated rural financial services and lower production cost (NDA, 2001b). Government ratified the plan and agricultural entities are currently engaged in adopting it as policy framework in designing strategy.

The core focus is encapsulated in the goal: "To generate equitable access and participation in a globally competitive, profitable and sustainable agricultural sector contributing to a better life for all." The challenge is to improve participation in all facets of the sector and rid it of the entry barriers rooted in its historical dualism. Programmes that will facilitate entry into the sector are required. Essential supporting and enabling strategies, crosscutting to the core strategies, have been identified as good governance, integrated and sustainable rural development, knowledge and innovation, international co-operation and safety and security. These complementary objectives provide the foundation without which the strategic goal of a competitive, inclusive and sustainable agriculture could not be realised. The vision of a united and prosperous agricultural sector requires partnerships. It also requires Government to act with greater speed and urgency and in partnership with farmers, agribusiness, NGOs and within government departments (NDA, 2001b).

Core strategy 1 aims to enhance equitable access and participation to agricultural opportunities and to unlock the entrepreneurial potential in the sector. Its focus will be on land reform, start-up support packages for entrants and partnerships, for which government will establish a framework. All avenues of land access; restitution, redistribution and tenure reform will be given attention. The most important economic determinant of change will not be land reform *per se* but the institutional arrangements supporting the total spectrum of farmers participating in the market (Van Rooyen, 1998). It is in this regard that a redesigned project approach could have a significant impact. As land reform without a comprehensive support system has proven to be unsuccessful (Kraft, 1996; Vink & Coetzee, 1996; Van Rooyen, 1998; Turner, 1998; Van Zyl & Kirsten, 1998; Van Rooyen & Van Zyl, 1998a; Anon., 1998c), the need for an integrated approach is obvious. Through the redesigned project approach, a selection process could be facilitated, needs analysis done, access to inputs, mechanisation, etc., organised and integration into the value chain achieved. Given the inhibitive input cost that faces the small-scale farmer, this appears to be a practical approach to land reform, empowerment and growth.

Core strategy 2 deals with competitiveness, a challenge that must be addressed for survival of many producers in the sector. As discussed in the previous section, agriculture in South Africa has since 1994 increased its competitive advantage and the challenge is to sustain and expand this (Van Rooyen, 2000). The key lies in competitive inputs and application of improved technology. Research and extension are therefore critical. To improve bargaining power, partnerships in the supply chain are important. Here also, the value of integration through a project approach is obvious. In essence, a demand side approach (i.e. removing market access barriers and unfair competition) as well as a supply side approach (i.e. export promotion) is needed (Van Rooyen, *et. al.*, 2001).

Core strategy 3 has as objective farmers' enhanced capacity to use resources in a sustainable manner. The criteria should be protection of the environment with adequate returns through economically viable, ecologically sound, culturally appropriate, socially just practices and efficient management (Torquebiau, 1995; World Commission, 1987; Batie, 1991). To stimulate rural development through agriculture is considered an important strategy for growth (NDA, 2001b), but innovative means must be found to boost harvests, as many current methodologies cause degradation. Some authors state that the survival of the human race will depend on curbing the degrading impact of developing societies (Lopes, 1992b; Aihoon & Kirsten, 1994; Spio, 1997) as the poor exert unsustainable demands on natural resources (World Bank, 1989). There is however a school of thought that claims that the impact of society has been exaggerated (Tapson, 1996; Stocking, 1998; Modiselle, 2001). Still, a sustainable approach is the only alternative, as the danger of sub-optimal resource use and subsequent environmental degradation is serious (Van Rooyen & Sigwele, 1998; Ruttan, 1988). A redesigned project approach has significant potential to facilitate sustainable resource use, as it entails effective participation, co-ordination and management.

The strategic plan for agriculture to enhance participation, competitiveness and environmental integrity will guide agricultural development for a considerable period. It will require concerted effort. Especially co-ordination, capacity building, planning and sequencing of implementation and monitoring is crucial.

Detailed action plans are to be developed through co-operation. Various stakeholders are involved in forums where the process is to be defined, programmes implemented and progress monitored. The principles of stakeholder integration, a thread throughout the strategy, should lead to initiatives based on the project approach. The principles identified throughout this study could contribute to this process.

### 2.2.7. Conclusions

Empirical evidence illustrates that no single theory of causation can account for economic development, with its complexities. This contributes to agriculture's contribution not always being recognised in evolving development policies. However, structural transformation requires sustained agricultural growth. For South Africa, an effective but diverse policy framework to cater for all groups is therefore required to achieve growth and social welfare. The country's development profile is unique in that rural livelihoods – depend substantially on non-farm incomes and remittances, influencing agricultural activity extensively. Although agriculture has a significant economic role, AIDS is impacting on rural communities, altering production and income patterns. Whilst agriculture has not fulfilled its potential as a catalyst for economic growth, the AIDS pandemic adds urgency to its necessity.

South African policy aims to achieve rapid economic growth with equity, whilst recent policy initiatives aim to stimulate agriculture's crucial role. Whilst overall economic growth does not inevitably lead to improvement in living conditions, it is a condition. A growing economy is required, but not sufficient. The constraints and inequities faced by small producers in adjusting to the competitive global market are recognised. Addressing access to services and resources is therefore a policy priority, leading to a redirection in budget allocation, also regarding research and human capital development. The private sector has a role to play in facilitating this empowerment. Today, the Tomlinson commission's report, that suggested comprehensive support to facilitate small-scale farmers' access, must be acknowledged. Especially relevant is the focus on linkages and access to services. Integrating services through a project approach constitutes an important growth strategy as its systemic, integrated nature could facilitate development. Through the revived project approach, selection, needs analysis, access to inputs, etc., could be organised and integration into the production chain could be facilitated.

Economic development is a multi-dimensional process, encompassing improved services, enhanced opportunities and social cohesion. The concept emphasises change in environments to enable poor people to improve their livelihoods. The argument of this study is that the project approach has a key role in this process. Clarifying its role, particularly in view of the required interventions inherent in the strategic plan for agriculture, is crucial. Services integration recognised during the fifties, recognition of diversity and linkages during the sixties, equity during the seventies and participation during the eighties all entail crucial aspects that could be facilitated in a redesigned project approach. Integrated, co-ordinated support to small-scale producers is inherent in the approach, with the aim to lower cost. How diversity can be dealt with, and how it relates to the project approach promoted in this study, deserves further analysis and is the focus of the following section.

## 2.4 Rural development: dealing with diversity

### 2.4.1 Introduction

Since democratisation during the early 1990s, decision-makers in South Africa are re-orientating agricultural services towards those previously excluded by the political dispensation. This process is constrained by a lack of quality information about the client (Carney & Van Rooyen, 1996), illustrated by the general misconception of coherent rural communities, households and farmer groups. The reality is a highly diverse and disrupted rural society (Perret, 2001; Van Rooyen, *et. al.,* 2001). Contributing to this diverse rural setting is a history of colonialism, apartheid, cultural diversity and aspects such as economic deregulation, urbanisation, etc. (Laurent, *et. al.*, 1999; Modiselle, 2001; Perret, Kirsten & Van Rooyen, 2001; Perret, 2001).

Resource poor farmers differ significantly in approach, as a result of differences in access to services and resources. While macro level diversity in an area is often acknowledged though agro-ecological zones, administrative districts, production areas, etc., micro-level diversity due to highly skewed economic status in a community is relatively much higher and is not recognised. Socio-economic diversity should be taken into account, in particular the manner in which farmers' access resources, and the manner in which they operate their farming systems (Laurent, *et. al.*, 1999). Forces such as migration, cultural and political change, etc., exacerbate diversity. Rural stratification in developing areas is in fact increasing and diverse policies, technology packages and institutional innovations are needed for different farmer types (Eicher, 1988; Stevens & Jabara, 1988; Laurent, *et. al.*, 1999).

This study therefore hypothesises that quantifying the existing rural diversity is a crucial element of development currently not adequately recognised and dealt with. The hypothesis deliberately contradicts the Taylorist principle that there is 'one best way', applicable for all types of farmers. In fact, a scientific description of relative homogeneous focus groups to facilitate focused and appropriate support should have a role in development. In this section, an in-depth investigation into this key issue is attempted through a close examination of this hypothesis.

### 2.4.2 Rural reality: A role of small-scale agriculture?

Farming in South Africa is often described as the production of the approximately 50 000 large commercial and mainly white-owned farms with strong linkages to industry and export markets. This sector does account for 90% of production and occupies about 88% of agricultural land (Anon., 1997), but is to a large extent the result of a century of policy-induced distortions (Van Rooyen, 1990). Evidence indicating that various policies destroyed small-scale farming from a once dynamic, market responsive and competitive sector can be cited (Bundy, 1979; Van Onselen, 1996; Van Zyl & Kirsten, 1998). In the latter part of the nineteenth century, African farmers supplied mining towns in the interior as well as towns in Natal with

grain, while also 'exporting' to Cape Town. African tenants farmed large areas, including white-owned land, through sharecropping (Bundy, 1979; Van Onselen, 1996).

Viable small-scale farming was subsequently drastically inhibited with the segregation laws of 1911, 1913 and 1932, which effectively eliminated small-scale competition from the market. Extensive government support for white farmers during the next 60 years facilitated increased national output, creating food self-sufficiency, but decreasing food security for the black population. During the late 1980s budget allocations to commercial agriculture averaged 67% of the total agricultural budget, compared to 33% for all homelands combined. This translated into highly inequitable support systems in transport and communication links, training, water, input distribution, research, extension and financial services (Chikanda & Kirsten, 1998).

Small-scale farming today entails enterprises constrained by limits to the quality, quantity or accessibility of one or more key inputs, and is practised mainly by black farmers (Lipton *et. al.,* 1996). These farmers usually operate at low output levels and have to deal with insecure land rights, non-viable farm units, lack of support and restricted opportunity to compete in agricultural markets (Van Rooyen, 1993; Perret, *et. al.*, 2001). Available input technology often fails to match their constraints, environment and management abilities. Although the political situation has changed drastically, the gap between white and black producers is slow in closing and no significant improvement in rural livelihoods is evident. Much of the commercially successful technology is also of limited relevancy to smaller farmers (Low, 1995). Because of the limitations, agriculture is often a last resort, also because remuneration in non-agricultural activities is higher than returns from agriculture (Eckert, 1996).

Small-scale farming in Southern Africa often fulfils a supplemental role. A common finding is that most ruralites (75-85%) use agriculture minimally to supplement larger, more stable income sources from elsewhere (Low, 1986; Bembridge, 1988b; Van Zyl, 1991; Panin *et. al.*, 1993; Eckert & Williams; 1995; De Klerk, 1996; Kirsten, 1997; Van Zyl & Kirsten, 1998). Only 15- 24% of rural households generate their own food requirements. Marketing is highly concentrated with a small minority of households accounting for more than 80% of the developing sector's sales (Van Rooyen & Van Zyl, 1998). Very few households have only one breadwinner and even then, more than one income source exists (Stilwell, 1985; Levin, 1994; Eckert & Williams, 1995; Eckert, 1996; Laurent, *et. al.,* 1999). However, agriculture plays a major role in the survival of many poor rural households as a fall back option when fixed employment opportunities are scarce and as such has economic significance, not to be condemned without acceptable alternative (Van Zyl, 1991). Agriculture therefore has a key role in economic development of SA, according to various authors (Swart, 1996; Lipton *et. al.,* 1996; Nomvete *et. al.,* 1997; Eckert *et. al.,* 1997; Van Rooyen, 1998; Anon., 2001b). However, four aspects in particular are determining factors. These are the natural resource base; trade patterns for agricultural products; the potential role of small-scale agriculture; and opportunities in the non-farm rural economy (Vink & D'Haese, 2002).

Linked to this argument is the one constant in the literature on the role of agriculture in economic development, namely the notion of the superior efficiency of small farms, which goes back to the 'poor but efficient' hypothesis of Theodore Schultz (1964). This superiority supposedly rests on the following grounds (Ashley and Maxwell, 2001):

Small farmers make efficient decisions
Small farmers use labour intensively, avoiding the cost of managing hired labour
Small farmers tend to utilise land located in areas that mitigate against mechanisation
Efficient labour use and marginal resources cause small farmers to maximise returns to land
Small farmers innovate successfully because most new technology is scale-neutral and not more risky than traditional technology – both in purchasing and in application
They can participate efficiently in marketing chains, individually or as groups (co-operatives)
They cause less environmental damage than larger operations
They spend more of incremental income on locally produced goods and services, thus maximising growth linkages.

However, as much as there are some areas in the RSA where ruralites conform to this model and where food production contributes to the local economy, there are as many that do not conform to this stereotype (Ashley and Maxwell, 2001). A combination of the following reasons could be put forward:

Land is not the critical scarce resource, but capital or labour is
Part time farmers (the common type) may not see the need to maximise returns from farming
Small farmers are more likely to grow low value staples for self-sufficiency
New technology reflects commercial needs, often with limitations for small farmers
The skills required to manage new technologies are beyond the scope of many small farmers
Product differentiation required for specific markets, impose quality and timeline requirements difficult for small farmers to meet
Large farming operations handle chemicals more carefully and efficiently and are more likely to use new, resource saving technologies.

These reasons represent a set of assumptions, not all of which are necessarily valid in a particular small-scale situation. The same is true regarding the first set of assumptions introduced by Schultz (1964) as quoted by Ashley and Maxwell (2001). The extensive diversity in the agricultural scene of South Africa makes generalisation difficult, dangerous and inherently unscientific. The extent to which agriculture impacts on economic development therefore depends on the potential of the resource and that of the farmer. The farmer's ability to manage declining commodity prices and his efficiency are crucial (Vink & D'Haese, 2002). According to Dr. Van Rooyen of the Agribusiness Chamber there are very specific conditions under which small-scale agriculture can be profitable and wealth generating (personal communication; 2002). These conditions will be further investigated in this study.

Consequently, there is indeed potential for small-scale agriculture, but this will not be a spontaneous process and must be driven by sound policies and support strategies. In some areas, for some farmers, agriculture might be a viable strategy whilst in others it might not. The challenge therefore is to identify farmer groups that could contribute to economic development and to develop appropriate approaches for these. Concurrently, appropriate support strategies for groups not commercially inclined (i.e. on food security), should be devised.

Given the extensive documentation on the supplemental role of agriculture for most ruralites, realism does not suggest a nation of small farmers (Eckert, 1991), but the identification and support of defined beneficiary groups in specific areas. Scientific analysis proves that market forces and opportunities do influence productivity in the developing sector: expert opinion concurs that with sound support and investment, it can contribute to agricultural production in SA (Bembridge, 1986; Binswanger, 1994; Singini & Van Rooyen, 1995; Brand, 1996; Lipton *et. al.*, 1996; Van Zyl, 1998). But, there are undoubtedly obstacles (Lipton *et. al.*, 1996). Entrenched institutional, resource and skill differences between the commercial and emerging sectors are vast. Still, small-scale agriculture has a vital role to play in transformation and economic development (Van Rooyen, *et. al.,* 1994; Nomvete, *et. al.*, 1997), provided that support systems take cognisance of the need for a group specific focus, human capital development and lowering input costs. Integrating stakeholders and facilitating access for farmer groups through the project approach, again appears a logical direction for development.

### 2.4.3 Quantifying diversity:

It has been established that most rural households have diverse incomes, in which pensions and remittances play a dominant role. This pattern is illustrated by various descriptive and typology studies (Eckert, 1991; Lipton, *et. al.,* 1996; Bembridge, 1988b; Van Zyl, 1991;May, 1996; Van Zyl & Kirsten, 1998; Van Rooyen & Van Zyl, 1998; Manona, 1998; Makhura & Kirsten, 1999; DSI, 1999a; Le Roy *et. al.*, 2000; Perret, *et. al.*, 2001). Despite its increasing scarcity, off-farm employment is the preferred labour allocation in rural areas and full-time farming is not the objective of most households. The high migration rate of young, skilled people, leaves agriculture reliant on the labour power of old people, many of whom are illiterate, have low work capacity and limited technical skills (Chikanda & Kirsten, 1998). Diversity in rural settings clearly manifests itself in the different types of farming systems, in the different livelihood systems (Ellis, 1993), and then in the variety of responses to development actions (Capillon, 1986), which one can observe amongst rural households with a common economic and natural environment.

To illustrate, a few examples are described: In Melani, a typical former homeland village in the Eastern Cape, the influx of people from so-called white areas during the sixties and seventies, as a result of apartheid policies, has caused the virtual collapse of agriculture. Currently unemployment is at 41%, with 29% of the inhabitants having formal and informal jobs. Roughly 73% obtain income from elsewhere and 70% of households do not have access to agricultural land (Manona, 1998; Wyngaard, 1998). In a typical

rural Limpopo province community, up to 33% of household income is generally obtained from remittances and 16.4% from wages. Other non-farm activities provide 24.5%, cropping 5.8% and livestock only 1.5% of household income. Pensions, transfers and other sources comprise 18.7% (Kirsten, 1997). In the erstwhile Venda, 69% of the income of participants in a study was from non-agricultural activities. On average, households spent 38% of their R1540 monthly budget on food (Le Roy *et. al.*, 2000). In Kwazulu-Natal agricultural income was found to average 6.1%, but for households with access to land, the percentage rose to 14.6%. Four broad livelihood-generating activities were identified; wage labour, commodity production, welfare and pension transfers and remittances (May, 1996).

Ardington & Lund (1996) found that households that obtained some income from agriculture comprised 37% of the total population of SA. Overall, 34% of rural income is derived from wages, 22.1% from remittances, 22.4% from transfers and 6.1% from agriculture. Categorising households according to a 'main source' of income, when the majority rely on multiple sources, therefore paints an incomplete, misleading picture of the rural economy (Ardington & Lund, 1996). Rural households clearly combine resources in various ways to enable them to maintain a livelihood. Farming income contributes far less than non-farm income to total income in most rural areas (Makhura & Kirsten, 1999). A Directorate Statistical Information (DSI) survey (1999a) confirmed that most agricultural activities are undertaken for subsistence purposes: Only 18% of almost a million households with livestock were involved in selling stock. While nearly 1.2 million households grew produce, only 3% sold it. The greater majority grew maize for sustenance purposes. From a variety of these descriptive studies, a broad profile of the resource poor agricultural sector can be derived. A fair assumption, based on these studies is that roughly 20% of the 11 million black rural people of South Africa are to an extent interested in agriculture. With an average size of six members per household, this entails 2 million rural households. The 20% interested in agriculture would then entail 400 000 households. It can further be assumed on this premise, that for roughly a tenth of these the objective is commercial production.

Due to the diversity of farming situations, technical messages developed by research often reach only a limited number of farmers. This is the result of technologies not being adapted to the social-economic conditions or objectives of the farmers concerned. The following statement summarises the issue: "All assistance to farmers should be based on knowledge of the local situation, and a willingness to respect local customs. Although, not inviolable, these customs have to be understood, and, before considering changing them, one should consider whether their legitimacy has not been overlooked." (Gourou Pierre, 1992: Terre de bonne espérance, ICRA course module).

Simply describing the agricultural sector in South Africa as dualistic, consisting of 'two agricultures' with a commercial and developing sector (Lipton, *et. al.,* 1996) is therefore not factually correct. Extensive diversity, with highly commercial farmers at one end of the continuum to ruralites with a minor supplementary enterprise on the other end, is evident (Singini & Van Rooyen, 1995). Small-scale farmers are less commodity-based, making them heterogeneous by nature (Francis, 1999). This led development specialists at a DBSA conference during 1995 to conclude that an inadequate framework of producer

categories exists. A rigorous set of categories of rural households is required for defining support programmes' targets. A methodology based on beneficiary categories, as a way of adding value to agricultural activity would have significant benefits (Singini & Van Rooyen, 1995). Differences between farmers are quantitative and qualitative, as supported by a range of empirical studies, highlighting the danger related to blanket recommendations (Laurent, *et. al.*, 1999).

In dealing with the hypothesis of addressing diversity, an important conclusion at this stage is that a technical optimum applicable to all agricultural situations, even in a homogeneous natural environment, is a fallacy. Given the evidence discussed, such a single technical solution, applicable for all farmers in an area, is also increasingly questioned in social analysis and economic development theory. Accounting for diversity within rural communities and agricultural schemes is required in order to deal with technical change and innovation in an effective, responsible manner (Laurent, *et. al.*, 1999). Various technological and institutional arrangements as well as group-specific strategies are required for sound economic development (Eicher, 1988; Coetzee, Kirsten & Van Zyl, 1993; Low, 1986b; Eckert & Williams; 1995). Practical categorisation of farmers should be part of effective support, to establish recommendation domains for farmers with similar circumstances, practices and opportunities. Limited resources could then be allocated optimally, resulting in appropriate solutions with enhanced adoption (Low, 1986b; Eckert & Williams; 1995), as facilitated by a clear vision of the client base (Eckert, 1996). The failure of developmental policy to take into account variation frequently results in a waste of resources and unintended side effects (Perret, *et. al.*, 2001). Recent policy initiatives stress farmer focused planning and strategies, if farmers are to be served efficiently (NDA, 2001b). To give this practical content within a social, economic and political context is a challenge in which describing rural diversity is crucial (Laurent, *et. al.*, 1999), as diagnosis and description is a prerequisite to any sound development programme (Perret, 1999).

### 2.4.4 Application of the typological approach:

Diversity, inherent in agricultural development, can be viewed as a manifestation of the capacity of the agricultural system to adapt and sustain different situations. Using typologies affirms differences in economic size (capital, land, and labour) as a source of inequality and rejects the Taylorist principle that there is 'one best way' (Laurent, *et. al.*, 1999). Progress in technical knowledge does not necessarily imply economic growth *per se*. The analyses of economic and sociological mechanisms that influence development are crucial in establishing sound recommendations for intervention (Laurent, *et. al.*, 1999). Although typologies do not determine the target groups and priorities, they contribute by specifying what (and who) are at stake in development choices (Laurent, *et. al.*, 1999).

Having accepted that no 'one best' technological approach exists, the aim is a framework that facilitates the identification of aspects that need to be quantified and compared. Farmers are active in a system of social relationships, influencing production choices whilst production means are unevenly distributed. A

typological approach constitutes a model aiming to represent the structure and function of a particular farming system. It facilitates understanding of farmers' choices and the production obtained. Through "stratifying the observed reality", a typology helps us to categorise farmer 'types' according to similarities in development constraints or social relations. A typology is therefore constructed to elucidate the agricultural reality of an area and devise appropriate solutions. Different farmers are quantified so as to identify target groups. A typology also provides data for the formulation of agricultural development policies, for predicting the impact of such policies, and for the choice of indicators of agricultural transformation (Laurent, *et. al.*, 1999; Perret, 1999).

The use of typologies has a long lineage in sociological analysis. Typologies have been used in rural sociology primarily to distinguish the social and economic characteristics of farming. Typological approaches depart from strict economic analysis and social participatory approaches, which often overlook diversity. It combines the respective principles and advantages of both approaches (Perret, *et. al.*, 2001). In recent works on agricultural systems (Perrot & Landais, 1993; Landais, 1998), the term *typology* designates both (i) the procedure that leads to building-up household types, and (ii) the system of types itself resulting from this procedure. This constitutes a clear shift from a positivist approach of farm classifications that involves mere grouping of morphological features. The typology approach refers directly to a constructivist paradigm, which rests upon the identification of coherent patterns. It strives to be exhaustive and integrative rather than sectoral (Perret, *et. al.*, 2001). Typology analysis is a multi-dimensional classification based on relations of contiguity or similarity: it groups and analyses according to main modes of operation and characteristics (Perret, 1999). Typologies seek to constitute a range of types that simplify reality whilst accounting for the main particularities that allow each type to be classified and analysed (Perrot & Landais, 1993). Ideally, a typology should include a number of types, each differing significantly from the others in terms of certain major criteria. Being able to identify within each type the practices that yield the best technical and economic performances would provide a common reference to be shared with similar farmers, extension and research (Laurent, *et. al.*, 1999).

There are commonalties between a typological survey and qualitative surveys based on Participatory Learning and Action (PLA) principles. Among "in-depth" (quantitative) surveys, typological methods are peculiar, as they use principles from qualitative survey techniques. For instance, the researchers themselves carry out the interviews, the interview questionnaires tend to focus on the main issues farmers have to cope with, etc. Typological works are generally clearly demand-driven, and tend to be operational. While both PLA and typological approaches 'borrow' from anthropological survey techniques in being relatively quick, typologies are not just models but a true representation of reality. Anthropological survey techniques such as PLA attempt to give an idea of this reality according to actors' viewpoints (Chambers, 1994). A typology, as a grouping exercise, is a quantitative multi-variable analysis; with at least 3-4 essential variables used for a clear discrimination of types. In contrast, standard quantitative analysis and the use of average data allow representation and synthesis that often disguise reality (Perret, 2002).

Farm typologies were first applied in intensive production contexts, for diagnosis and technical change purposes (Capillon, 1986; Perrot & Landais, 1993; Landais, 1998), but were extended to a rural development context (Laurent & Centres, 1990; Laurent *et. al.*., 1999; Perret, 1999). Within the framework of rural development, designing a typology will imply grouping and describing households with similar needs, with regards to the project's objectives. Typology schemes represent formalisations of the complexity of the rural world at local level. Typological techniques are ideally used during the preparatory stage of a project, assessing its impact on different farmer types. It has an important role in developing farm management recommendations, technical advice and technology adaptation. Through a typology, group representation within a local organisation can be facilitated. Interest groups and for instance, the most vulnerable groups, could be identified. Further modelling and scenario testing activities can follow. Data highlighted with a typology can also be used as indicators of project impact (Perret, 2002).

As an example a farm typology was established for hundreds of farms distributed along a transect in the Kilimanjaro area. It was based upon four major criteria: Land; farm income; labour; and cattle characteristics. Several possible criteria were not used, as they were not discriminative. The typology was inclusive of all possible farms and each type showed a great homogeneity. It described the way the region operated economically, confirmed the importance of the production systems and served as a tool for further development. It had a cognitive function to provide a representation of existing systems and to identify target groups. It also had a predictive function in anticipating the way an innovation proposal would be received. Therefore, it contributed to decision-making in project management, isolated limitations of the programme and identified constraints for each type. This accurate typology resulted from continuous interaction between farmers, researchers and regional support services. Its methodological requirements were less stringent than in the case of *a priori* approach and it provided a remarkable training basis for all concerned. Its implementation provided guidelines for initiating specific development operations as well as for re-focusing the total project. In this respect, it provided a real and valuable tool for agricultural policy (Laurent & Centres, 1990).

### 2.4.5 South African categorisation efforts:

A number of classification systems have previously been developed for South Africa. More recent typology studies aimed to describe this diversity in order to propose more "target orientated" and appropriate support. Results indicate that farmer classification has high potential application in South African development (i.e. D'Haese, 1995; Wonderchem, 1997; Laurent *et. al.,* 1999; Modiselle 2001; Perret, *et. al.*, 2001). The simplest and most common classification specifies a dual agrarian structure for SA, composed of about 50 000 large scale commercial farmers and roughly a million small scale farmers, the majority of which do not even produce their own subsistence requirements (Bembridge, 1988; Eckert, 1996). Subsequently, a classic categorisation by Bembridge (1988) has the small-scale sector subdivided into four groups, in terms of economic differences, resources, etc. The first group are the resource poor non-landholders, with no access to land or large stock, comprising roughly a third of the rural population.

The next group entails small-scale landholders with below subsistence production levels who usually sell no produce and comprise more than half the rural population. Progressive small-scale landholders, comprising roughly 10 to 15 % of the population, adapt some technology and sell some produce, but do not necessarily produce enough for household needs. This group includes many traditional project farmers. Market oriented farmers who are making a living from farming form the fourth group and this group comprises less than one percent of the rural population.

Eicher (1988) postulated that four main types of farmers exist in Africa. The first group comprises the resource poor; usually net buyers of food, selling their labour to other farmers, involved in many non-farm activities to generate extra income. This type is common in South Africa, including the North West Province. The second group comprises small holders and herders who rely to a large extent on family labour with limited non-farm activities. This group is smaller than the previous one. Communal livestock farmers in SA have these characteristics, although they usually also have other sources of income. The third group, according to Eicher (1988), are the "progressive" farmers who own and operate their farms, often use hired labour, own implements and market some surplus. The more successful project farmers in the former homelands fall into this category. The last group constitutes large-scale farmers with political power, often involved in business. This most progressive resource poor group is also evident locally and is often involved in share cropping, where land of other landowners is utilised at an agreed price.

The division between subsistence and more commercially orientated farmers in the erstwhile Bophuthatswana was complex (Worth, 1994). Agricultural development in this homeland focused on increased productivity through the introduction of technology. The majority of farmers were unsuccessful in adopting these technologies (Reimer, 1987; Stacey, 1992). Agricultural development has been applied to all willing participants, irrespective of their status on the subsistence-commercial continuum (Worth, 1994). Karodia (1994) subsequently attempted a categorisation of ruralites in the newly established North West Province. He described two main groups; dwellers forming 20% and producers making up the rest of the rural population. Three types of producers were identified; firstly the sub-subsistence farmers who produced very little and where at least one household member was likely to be a migrant. No specialised economic activity other than wage labour existed, and farming is mostly the responsibility of woman and children. This group was estimated to constitute 60% of the rural population. The next group; emerging farmers, constituted households with some livestock and land, and a measure of specialisation. This group makes up approximately 20% of the population. The final group comprises those efficiently producing and generating income. This group can, in turn, be sub-divided into two distinct groupings. Subgroup one are self sufficient, likely ageing farmers, constituting approximately 1% of the population where commercial expansion is inhibited by lack of resources. The other sub-group; commercial farmers, have relatively larger holdings and the breadwinner is a full time commercial farmer. This group makes up 2.5% of the rural population.

According to Eckert (1996), four resource measures can be combined in a classification of SA's rural dwellers. These are access to capital, labour, off-farm income and farming skills. These criteria to a large

extent determine the type of farming practised. The availability of access to capital can for instance vary from severe capital constraints with no available off-farm income, to moderate capital constraints and access to off-farm income from remittances. A small, poor, female-headed household will obviously have severe labour constraints in relation to a bigger family with available family members and off-farm income for hired help. A continuum of possible scenarios exists. Where moderate capital and labour constraints occur and a relatively high level of farming skills exists, high potential emerging farms can be expected, particularly if off-farm activities are limited. A combination of severe capital, labour and skills constraints will probably result in supplemental farming.

May (1996) described seven rural groups. The first group being marginalised households with no access to wages, remittances or transfers, forming roughly 5% of the population. Agriculture provides 80% of household income. The second group comprise welfare dependent households that form 12.5 % of the rural population, with 95% of income from state transfers and less than 5% of income from agriculture. For a quarter of the rural population, remittances form almost 70% of household income. For this third group agriculture provides 6% of income. Households in the fourth group primarily depend on wages and form 42.5% of the rural population, with more than 70% of income coming from wages. Less than 4% of income is generated by agriculture. Group five has various income sources and comprises 13.5 % of households. Welfare contributes 23% to income and agriculture 4%. So-called entrepreneurs, group six, form 1.5% of the rural population. Agriculture's contribution to income is 18%, with 5.5% from welfare payments and one percent from remittances. Group seven is the group of commercial farmers (less than 1% of the rural population) who obtain agricultural income.

Farmer categorisation and the need to focus on potentially good farmers are however not new concepts. An Agricor document (The farmer question; Nicholson, CA, 1989) refers: The author argued that human potential and motivation should be a determining factor in developing support, to enhance efficient usage of resources. An understanding of the motivation of the client must be facilitated. The author established that certain characteristics identify successful farmers. These are usually literate, use extension services, have contact with commercial farmers and are less traditionally inclined. They express entrepreneurial aspirations, operate larger holdings, want land ownership, employ labour, have other income sources and accept personal responsibility. These findings are supported by similar work done by Bembridge (1986b) and also international research by McClelland (1961) and Durand (1975). More recent work (D'Haese, 1995; Wonderchem, 1997; Laurent *et. al.,* 1999; Modiselle 2001; Perret, *et. al.*, 2001), however, describes a comprehensive livelihood analysis to facilitate agricultural development in a wider (rural) context.

During 1997, the concept of a 'rural typology' was introduced into agricultural economic analysis in South Africa. In a study done in the central Eastern Cape, a typology of rural households with seven types was developed. The largest type (57.2%) consisted of households depending on welfare and remittances. A type whose main source of income is farming comprised 18.6%. Another type comprising 7.2% earned income from non-farming activities, while 5.7% of households were described as 'moneyless'. A 'landless household type' comprised 5.2% while 1.5% had access to land, but did not farm. The large majority

(70%) viewed farming as a supplementary activity and less than 10% were not involved in farming. Only approximately 20% farmed to earn cash income (Laurent *et. al.,* 1999). Other studies of Mango producers in Venda (D'Haese, et. al., 1998) and at Leliefontein in the Northern Cape (Modiselle, 2001), showed that a lack of strategy and therefore development plans, was the result of a lack of knowledge and understanding of the large diversity amongst rural farming households. The hypotheses of these studies, which were proven correct, stated that rural households' behaviour is diverse and that this diversity is reflected in the way households practice agriculture. The conclusion of these studies was that it is essential that knowledge of diversity be integrated into planning appropriate support programmes and extension services. It is only through an accurate description of the actual situation of a particular farmer type, that a 'tailor-made' strategy for that group can be developed.

Two recent examples of typological approach utilisation in SA were in the construction of a typology as part of a Land Care project in the Eastern Cape and in analysing diversity at various irrigation schemes targeted for restructuring. Perret (2002) used the approach to quantify livelihood strategies based on wool production in the Eastern Cape: In 1999, a Land Care project was initiated to create financial stability in targeted communities through agricultural interventions. As one of the poorest regions of SA, livelihood systems resort mostly to claims and non-farming sources of income. Some farming takes place and wool production forms a significant activity in the area. Typological techniques were implemented to address diversity and to assist in planning of the Land Care project's activities. The criteria for classification, determined through literature review and consultation with locals, dealt with prevailing livelihood systems. Six types, varying from non-farming, very poor single female-headed households to full time farmers were identified. All types were identified in the various communities studied, although their relative sizes varied. The project strives to focus on the commercially inclined level: shearing shed and dipping tank rehabilitation, gene-stock renewal and capacity building in shearing and wool grading were implemented. However, as a result of the typology, which highlights the plight of certain households, the project also involves the very poor women in productive activities (especially wool sorting and grading). Concurrently, access to basic collective production facilities benefits all. A comprehensive strategy, based on farmer type and its main issues and threats, has therefore been devised. Each type's strategy has been described according to the issues and threats that have been identified during the surveys. The typology also provided *ex post* justification of the technical innovations, which led to the success of this award-winning Land Care project.

The typology approach has also been used successfully to describe farmer types and agricultural activity at two irrigation schemes of the Northern Province (Dingleydale and New Forest). As part of the Irrigation Management Transfer process, all assets at these schemes are to be transferred to the local population, after decades of public ownership and support. It also includes the rehabilitation of infrastructures and the establishment of farmers' Water User's Associations, which are to take over ownership and collective management of the scheme. At these schemes Merle *et. al.* (2000) developed a typology of households. Whilst it was impossible to take account of all household's characteristics; it is faulty to consider the scheme homogeneous. Hence, a typology that groups households with similar strategies and

characteristics, with regard to a given objective was developed. Diverse strategies depending on household history, composition, objectives, etc., could be created. Thorough economic analysis identified vulnerable farmer types, whose plight might worsen after the transfer. On the other hand, efficient and dynamic farmers have also been detected, which should become more efficient and integrated within commercial circuits. The study also highlighted differences in support requirements, according to social and micro-economic traits.

### 2.4.4. Conclusion

It can be concluded that the rural situation, even within a confined situation or a homogeneous agro-ecological zone, is too complex and diverse to promote a single strategy such as "middle class farmers" or commercial small-scale agriculture, as a realistic rural development strategy. The small-scale farming community is heterogeneous and must be treated accordingly. By recognising a range of farming systems, the tendency to focus only on a certain group can be avoided (Auerbach, 1998). A typology could therefore link social diversity to technical change by contextualising and focusing the interventions required for each type (Laurent, *et. al.*, 1999). Clearly farmers differ in approach, as a result of differences in aptitude, attitude and access to services and means. This explains the common inability to transfer sound technology. The challenge is to first describe rural diversity and then empower disadvantaged, homogeneous farmer groups, to revitalise the traditionally dynamic and competitive small-scale sector. The many stakeholders willing to support developing agriculture are positive developments. Support systems are available but need to be mobilised and coordinated. However, the inability to integrate these structures into viable agricultural and rural development programmes and projects (Van Rooyen, 2000), can be explained by the lack of focused support mechanisms dealing with the various agricultural groups. The typology approach, through systemic analysis of rural activity, enhances inclusivity as it highlights group-specific constraints.

In terms of the hypothesis that diversity must be quantified and dealt with to facilitate growth, the literature findings indeed support this hypothesis. Clearly, diversity leads to different needs in terms of development and clearly, dealing with such diversity strengthens development efforts. This issue will therefore get further attention in the case study at Sheila.

# CHAPTER THREE:
# THE DEVELOPMENT ROLE OF AGRICULTURAL PROJECTS

## 3.1 Introduction

It has been established in this study that to obtain growth with equity (an important priority in South Africa); the agricultural sector must play a key part. It was also shown that the developing sector potentially has a significant contribution to make. However, in order to contribute towards growth, this sector cannot be treated as homogeneous.

It is argued that the lack of progress in agricultural development, despite innovative support, can to an extent be ascribed to a lack of focus on distinct groups with distinct requirements. These findings support the first hypothesis that quantification of economic and social diversity in an agricultural community will strengthen development efforts.

Another element required for successful agricultural development is the ability to integrate support structures with producers through viable programmes with optimal stakeholder-linkages in the value chain. This would facilitate sound strategies focusing on increases in profitability, employment and efficiency in the food and agricultural business sector.

Projects that harness natural resources, promote technological innovation, improve production, enhance human capacity, etc., by mobilising support and sound participation, potentially offer a comprehensive, focused approach to achieve development and economic growth (Van Rooyen, *et. al.*, 2002). These findings support the second hypothesis; stressing the need for integration of support structures through the project approach.

Whilst the project approach constitutes a major development strategy used in the past, the extent to which the concept remains valid today is evaluated in this chapter. The need for integration is substantiated through an argument for collective action and high potential integration models. This is followed by an examination of the traditional project approach; dealing with its philosophical background, definitions, project stages and elements, as well as the approach's record.

Subsequently the future of the approach, primarily dealing with the identification of key criteria for development through projects, is discussed. As it was established that diversity should be dealt with in terms of focused support of distinct farmer types, the integration of the typological approach into project planning and implementation will also receive attention.

## 3.2 Defining integration in agricultural development

### 3.2.1 Addressing inhibitive transactions cost

Sub-optimal production, poor infrastructure and unreliable markets dominate smallholder agriculture in South Africa. Most households obtain incomes from non-farm sources. Key resources such as land, credit, technology, inputs and markets are not accessible. More hidden problems are a lack of information, skills and fear of involvement (Bembridge, 1988b; Van Zyl, 1991; Low, 1995; Lipton, *et. al.*, 1996; Van Zyl & Kirsten, 1998). A crucial constraint faced by small-scale producers is the accessibility and affordability of agricultural inputs, which diminish their ability to raise income and increase food security. Despite this, smallholder agriculture must evolve, because it plays a crucial role in development, employment, welfare and stability (Delgado, 1998), as also established in the previous chapter. Agricultural development could basically be dealt with in two ways; promotion of sustainable low-input agricultural practices through technology and policy directives or (and) through initiatives to improve accessibility of inputs (Singini & Van Rooyen, 1995). These initiatives' potential in particular situations have to be clarified.

Commercial operators buy in bulk, lowering unit costs. Resource poor farmers cannot influence unit costs in the same manner and have to pay higher input prices, causing problems with competitiveness. These imperfect market conditions give rise to negative economies of scale, making larger farms more efficient (Van Zyl & Kirsten, 1998). While remunerative opportunities for the smaller farmer are available in value adding and marketing, these typically require processing associated with high cost. Most marketable agricultural products also have a high ratio of cost to final value, excluding many small farmers due to the limitation of the associated 'up front' investment (Delgado & Siamwalla, 1997). This is illustrated by an example from the Netherlands, with highly technologically sophisticated small-scale farms. Even despite great efficiency, economies of scale has had a significant influence on the reduction in the number of Dutch farmers by 50%, to 200 000, from 1960 to 1980. Since then another 50% reduction to less than 100 000 farmers on even larger farms took place and the trend is continuing (personal communication; Dr. HJ Enserink, ICRA, Wageningen). Whilst EU policy also induced these changes to some extent, the impact of economies of scale is significant: real prices stayed relatively constant since the 1960s while real input costs rose continuously (Ruigrok, 2001).

While specific statistics for SA are less known, it has been established that a significant number of commercial and developing farmers have left the industry, as a result of negative trends in input: output ratios. In the commercial sector this has led to fewer, bigger farms, whilst many small-scale farmers in rural areas simply stopped or reduced agricultural activities as support schemes were scaled down and terminated (Vink, 2000; Van Rooyen, 2001). Aggravating the problem is that cost reducing opportunities and incentives for small farmers are simply lower than for larger operators (Delgado, 1998). While there are various aspects involved in farm expansion and terms of trade trends, the evidence suggests that

economic integration of stakeholders to address economies of scale in production through a project approach represents a viable strategy in dealing with a major small-scale constraint: inhibitive input cost.

### 3.2.2 Collective action strategies

The importance of a unified farmer lobby negotiating for more favourable terms of trade is obvious (Van Rooyen, 1998): By working together, farmers identify needs, consolidate demands and aggregate economic power. The new strategic plan for SA agriculture encourages formally established farmers' organisations as a powerful vehicle for empowerment in the long term. Collective action and bargaining has the potential to activate a range of services to small farmers. This capacity does not currently exist and more direct action is required (Carney & Van Rooyen, 1996). Agricultural co-operatives in South Africa therefore constitute a potentially important structure for supporting new farmers as they operate as agents for their members in purchasing, selling and processing activities. They usually also administer payments and generate economies of scale in providing services at reduced costs. They can reduce risk to members by introducing pool-pricing and insurance schemes and enable access to new small and large scale technology (Van Rooyen, 1998b; NDA, 2001b). The definition of a co-operative as a formal collective action by an interest group to serve its economic interests should be the point of departure. Member commitment and economic efficiency are basic, essential conditions as is the development of member ethics and values. Member ownership, viable business practices and supportive interaction with government are essential components of a formal collective arrangement (Van Rooyen, 1998b).

In former homeland areas, co-operatives previously served as governments' instruments to promote farming through input and credit services (Van Rooyen, 1998b). Many of these failed due to poor ethics among members and management and as a result of lack of managerial capacity and skills, resulting in poor business practices (Hussy, *et. al.*, 1993; Stilwell, 1998). Measures to develop collective actions between farmers through capacity building and responsible financial support are however essential as part of project development (NDA, 2001b; Van Rooyen, 2001). Pre-conceived ideas on the appropriate organisational format should be avoided, local initiatives should be the basis and sound business principles must be enforced (Hussy, *et. al.*, 1993; Singini & Van Rooyen, 1995; Stilwell, 1998). Services could include credit, insurance, input provision, marketing, research, extension, managerial support, storage, agro-processing, infrastructure and lobbying (Singini & Van Rooyen, 1995; Stilwell, 1998). Government policy to underpin precisely this type of co-operation is addressed in the Strategic plan for South African Agriculture (NDA, 2001b).

Whilst mixed results from previous 'collective actions' (i.e. contract farming, co-operatives, out-grower schemes) have been achieved, it is argued that a support strategy based on stakeholder integration could provide the catalyst for small-scale efficiency. Collective action is the logical route to farmer empowerment (Carney & Van Rooyen, 1996; Delgado & Siamwalla, 1997; Chikanda & Kirsten, 1998). However, historic institutional co-operation and linkages between public and private sectors, as well as

between institutions, were generally poor (Botha, 1995). In contrast, Merrill-Sands & Collion (1992) argue that increased stakeholder participation is a critical ingredient for development. These authors provide evidence that indicates that in specific integrated projects in the USA, the Netherlands, Israel and China, impressive agricultural growth is evident. The implementation of a project approach, where farmer groups are involved in planning, organisation and implementation constitutes an ideal setting facilitating these much-needed links between stakeholders in the emerging agricultural sector.

### 3.2.3 Designing integration and collective action

Although integration of smallholders into input supply, processing and marketing is clearly required, these types of services are often not functioning efficiently in the developing scenario to begin with (Delgado, 1998). While support services are in theory now available to all farming sectors in South Africa (due to radical policy changes), accessibility remains limited, as institutional settings, the vehicle for support delivery, are lacking (Stilwell, 1998; Van Rooyen, 2001). Institutional transformation is needed to facilitate effective access. Pro-active policies and strategies are required, but subsidies are fiscally unsustainable, and require institutional and administrative costs. These services, usually operating interdependently, must be integrated. Credit institutions, input suppliers, processors and others must be linked more closely to producers (NDA, 2001b).

Integration usually has three dimensions, the first being a shift from macro to micro strategies, i.e. from policies to strategies programmes. This is addressed within the strategic plan for South African agriculture (NDA, 2001b), which emphasises the need for co-operation in the agricultural value chain and specifies the crucial role of the private sector. The plan also deals with the second dimension; i.e. linkages within related sectors, or integration. The important link between, for instance, agricultural and transport development is a case in point. The third dimension of integration deals with sequential development, linking actions in a logical 'cause-effect' sequence to ensure a sound activity flow (Personal communication; Dr J v Rooyen, ABC, 2001). This has to be developed further through innovative programmes and project innovation.

As an example, a contract-farming scheme represents a potential integration model. Especially schemes with substantial farmer participation in management function well and show sustained production. While economies of scale tend to lock out independent small operators in high value activities with significant input cost, these types of projects could make these enterprises accessible for small-scale producers. Educated, local people should be involved in management. Participants must be skilled, as those with limited skills are often too easily subjugated to be effective in participatory control. Selection is thus required and is in fact a prerequisite for success. "Any scheme that sets about supporting small-scale rural producers has to confront the issue of targeting, because of fiscal resources". Various authors suggest that the administrative and training costs of very specific targeting and increased capabilities are easily covered by the results. Careful targeting is necessary to avoid making resources available to

people who cannot utilise them effectively and exclude people who can (Glover, 1987, Little & Watts, 1994; Jaffee & Martin, 1995; Singini & Van Rooyen, 1995; Delgado, 1998). This evidence again supports the diversity hypothesis. High returns to co-ordination amongst research, farmers and extension are also beneficial in integration models, particularly where input use is complex, requiring knowledge and timely availability (Delgado, 1998).

According to Groenewald (1998), the history of 'poor whites' settled on irrigation settlements early in the previous century, constitute a relevant example of integration. Under this system, settlers joined these government schemes on a trial basis. They received loans at favourable rates to purchase equipment. Land was leased for a period of five years. Rents were based on the value of the land, and cost less than 5% of the land value. Settlers could at any time exercise an option to purchase, through redeeming the price plus interest over twenty years. Farmers without the necessary ability and perseverance left the settlements, while those who gained them, became efficient and expanded. There is no reason why such an approach could not be successful in current times, as the challenges are similar. If suitable settlers are recruited, such projects should have the same potential for success, provided appropriate technology and well-directed support programmes accompany the effort.

Whilst the public sector is now focusing on the small-scale sector, private sector response has been limited. Public facilitation is therefore required (NDA, 2001b). However, development managed by the public sector often leads to artificial, unsustainable organisations. Government involvement in marketing also led to disappointing results in the past. Monopolistic approaches to institutions of collective action are in principle not desirable and actions should encourage markets, not replace them. Therefore, the appropriate institutional form to promote marketed output should involve a mixture of public and private involvement (Delgado & Siamwalla, 1997; Chikanda & Kirsten, 1998). The public sector could facilitate a process whereby organised agriculture, co-operatives etc., are involved in capacity building and creation of access (Stilwell, 1998; Carney & Van Rooyen, 1996).

Various other institutional types of smallholder production support are known, varying considerably in ability to handle transactions cost, according to their links to processing and marketing. The independent smallholder remains the predominant form of production. Where low transactions costs exist, this is ideal, provided that research, extension and input suppliers are available and effective. Where transactions costs are high, integration with other stakeholders becomes economically attractive. Typically this includes contract farming, producer co-operatives and out-grower schemes. In whatever form, this constitutes a viable way to integrate small farming within the production chain, thus promoting incentive and growth. Many of these schemes represent some of the most lucrative opportunities available to smallholders. During 1990, a review of global development experience by the World Bank showed that such strategies, emphasising broad-based growth and provision of services, was the most effective route for sustained poverty alleviation. Participating farmers typically benefit through assured input supply, credit against delivery and an assured market. Extension is usually provided, typically at a higher rate and quality than State services. Access barriers to assets, information, services and markets are dealt with through contractual arrangements.

The involved party (supplier/marketer/processor) gains the advantage of a relatively assured supply of the commodity at harvest and the option of making collateral loans. Such arrangements eliminate extensive expense and monitoring problems, facilitate better relations and share overall risk (Glover, 1987; Hussi *et. al.*, 1993; Grosh, 1994; Little & Watts, 1994; Swegle, 1994; Jaffee & Martin, 1995; Delgado, 1998).

A source of information and skills and an alternative for integration of small-scale producers into mainstream agriculture are commercial farmers. Incentives for them to share their insights must be investigated. A strategy that could be explored could be the linking up of emerging farmers' associations with functioning commercial enterprises. This could facilitate improved access to technologies and services to implement these technologies (Carney & Van Rooyen, 1996). Small farmers do recognise a need for skill development and partnerships, where commercial experience is utilised to facilitate access and obtain skills (Lipton, *et. al.*, 1996). Many such co-operational efforts in SA show significant potential (Potgieter & Heunis, 1995; Van Zyl *et. al.*, 1995; Ngqangweni & Van Rooyen, 1998). A number of variants of participation schemes have also evolved between owners and farm workers (Van Zyl *et. al.*, 1995). These joint ventures hold considerable potential for rural development and agrarian reform (Ngqangweni & Van Rooyen, 1998). Another option; farm worker equity schemes include examples whereby workers buy into an existing going concern, or establish partnerships to start new ventures. It provides empowerment opportunities and contributes to rural welfare (Nel, *et. al.*, 1995; Ngqangweni & Van Rooyen, 1998). This approach has substantially fewer fiscal requirements than state led farmer settlement (Nel *et. al.*, 1995; Potgieter & Heunis, 1995; Ngqangweni & Van Rooyen, 1998).

While the integration of stakeholders is a promising avenue of growth, the alternative is often benign neglect. Effective access will stimulate entrepreneurial activity and trigger production and growth (Delgado, 1998). The focus on access in these types of models is shared by the FSP approach, with support through improved access to resources and services (Van Rooyen, 1993; Singini, *et. al.*, 1992). The successful elements of the FSP approach should be useful in a redesigned project approach. A particular focus should be the classification of homogeneous groups to accommodate diversity in project areas, for sound participation. Farmer selection should be objective and criteria should emphasise a positive attitude, commitment towards and aptitude for farming. Farmers should be involved in management, and support in training in these skills should be available. Individual responsibility and accountability must be clarified (Van Rooyen & Nene, 1996).

Integration, through a redesigned project approach provides a practical focused approach dealing with a variety of agricultural and rural development constraints. This approach, facilitating access to services and inputs is to an extent a return to the conventional wisdom of the 60s and 70s with smallholder commercialisation through projects. The next sections will examine these past strategies in depth, to facilitate insight into previous failures.

## 3.3 Describing the project approach

### 3.3.1 Definitions and notions:

A serious issue confronting society is successful implementation of development interventions or projects. Many failures in this regard can be traced to poor preparation, planning, selection, implementation or a combination of these. A project is an instrument of change in altering a major constraint; a co-ordinated series of actions resulting from a policy decision (Benjamin, 1980). It therefore constitutes an intervention with the aim of addressing a specific problem such as correcting a market failure. A project has a conceptual boundary containing the physical structures, financial flows, beneficiaries and participants. It has a start and finish and entails specific objectives for an improved future situation. It deals with choices on where and how to intervene through time with investments and activities. It entails an intervention through organisation of land, labour, capital and management resources in the context of a particular human setting. Key aspects include structuring, mobilisation and participation of willing and able participants, other stakeholders, infrastructure, human capital development systems, etc. (Van Rooyen, 1995). Development projects are often publicly funded and have a central management function. The FAO refers to a development project as "a proposal for investment where a cost stream results in a certain flow of benefits over a specified period". Gittinger (1982) describes agricultural projects as interventions aimed at improvement through a complex series of activities that use resources to gain benefits. If effective, production costs compare favourably with benefits produced. World Bank publications expand and link project development to a flow of benefits. "Generally, in agricultural projects an investment asset is expected to realise benefits over an extended period of time". A definition for the project approach could therefore read: An institutional intervention model for changing a group's livelihood. This involves complex interaction amongst various interdependent (technical, physical, biological, social, political) components. It further entails an investment activity in which financial resources are expended to create assets that produce benefits to individuals and society over an extended period (Van Rooyen, *et. al.*, 2002).

Various descriptions of the project approach are available because of the various interpretations of the concept. As described, key elements include a technical intervention, based on a problem, leading to a proposal and eventual implementation. Managerial and organisational skills are required; input and processor networks must be activated; demand must exist for the envisaged product; and selection of appropriate participants and support services must occur. Sound management is vital and the implementing agent should primarily optimise linkages (Van Rooyen, 1983; Van Rooyen & Nene, 1996). Community based structures should be stakeholders (Stilwell, 1998). Projects are often financially supported by both government and development agencies and managed as part of a broader development strategy. Given the financial implications of a project, subsidisation is required. As this type of development can be considered merit good, the public service is the ideal facilitator, but responsibilities, funding and performance criteria must be clear. Where the private sector or Non Government

Organisations (NGOs) could provide a service at a required standard, outsourcing this service should improve efficiency. The aim usually is increased production to stimulate job creation, optimal resource use, effective technology and co-ordinated management (Van Rooyen, 1995; Van Rooyen, *et. al.*, 2002).

Criticism against project definitions is that they often emphasise technical aspects, i.e. capital or financial flows, while no direct reference is made to the development functions of a project which include human development, distributional and social impacts. The contemporary view is that development projects should in the first place be people-oriented. Recent convention thus defined a development project as: "An instrument of change: a co-ordinated series of actions and interventions resulting from a decision to change resource combinations and levels so as to contribute to the realisation of development objectives". The definition of a development project should be expanded to contain the notions of participation and sustainability for stakeholders (including farmers, public and private investors (Van Rooyen, *et. al.*, 2002).

Agricultural development projects do not function in a vacuum: Their nature is determined in context of policy and strategy as they constitute a link in development planning and implementation. Projects must be judged the basis of effectiveness, productivity and equity. Economic and social objectives can be seen as the improvement of prosperity through efficiency (Van Rooyen, *et. al.*, 2002). This broader approach to defining a project allows objectives to include increased income, employment creation, distributional or environmental aspects and other growth dimensions. A wide range of criteria measuring micro and macro impacts will therefore be required to determine whether a project investment is justified or not. An analytical framework for managing and analysing information across the expected life of a project is therefore required. A principle of economic project appraisal is that participants must benefit consistently more in the "with project" scenario compared with a "without" project scenario. Government must contribute to a "sustained" beneficial status, through support in technology development, extension, infrastructure investment, etc. Government should ensure that all support be aligned with policy objectives. However, if the long term economic and financial benefits do not exceed the costs, subsidisation, social engineering and aligned policies will not guarantee sustainability and participation.

A limitation of the project format is its reliance on quality projections of expected benefits and costs. Still, projects must be appraised, or inefficient expenditure is almost sure to result. When all dimensions are attended to in a thorough manner, projects become focused and driven entities to promote development over time. This creates focus within broader development strategies, macro economic objectives and policy. Within this framework, development projects do not necessarily have to focus on production. Job creation, foreign exchange savings, livelihood improvement and income redistribution should be aimed at within development planning via the project approach. Project interventions therefore seldom result only in direct impact i.e. those that only affect project beneficiaries. A range of effects can be recorded. These include direct and indirect or secondary impacts, i.e. multipliers generated by increased income; employment linkages in up- and down stream activities required for a project, and a range of external effects, including environmental, ecological, institutional and social impacts. The true impact of a project should thus be assessed in terms of all these effects in order to determine the real contribution.

In view of the definitions and description of agricultural development projects, they should be judged primarily on the basis of effectiveness; productivity and economic efficiency. Equity considerations, however, should also apply in project evaluation: Given that one of the hypotheses of this study argues extensive economic diversity in rural populations, an intervention through a project should cater for the different types of beneficiaries in a targeted population. Still, an agricultural project that is not driven by the economic principle of optimisation will be in danger of producing unacceptable financial and economic results, especially for beneficiary groups. Broad economic and social objectives should thus aim at improvement of prosperity through preference to efficiency-driven actions. Given the usefulness of the project format, the concept has previously been used extensively as instrument to promote development and change. Although mistakes were made, the concept remains sound. A well-designed project can indeed still be the "cutting edge" in development strategy and programmes (Gittinger, 1982). Issues related to this "cutting edge" ideal are discussed in following sections.

### 3.3.2 The project cycle

The process of project development follows a cyclical sequence: An idea germinates; passes through clarification steps; activities required to achieve the objectives are isolated; alternative options are appraised; followed by decision-making; implementation; monitoring; completion and final evaluation. The term project cycle indicates this cyclical nature of the project approach. In operational terms each stage in the cycle leads to a decision point. The decision to be taken at the end of each stage is if and when to continue to the next stage. The various elements or stages in the project cycle are described in Fig 3.1 with feedback processes between each interactive stage in the cycle (Van Rooyen, *et. al.*, 2002).

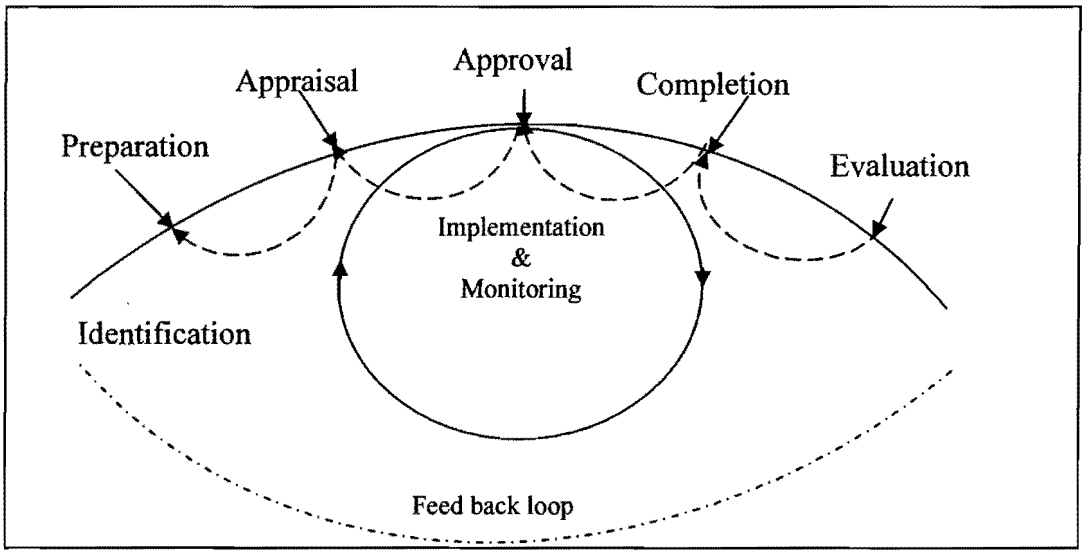



Figure 3.1: The project cycle:

**IDENTIFICATION:** This stage involves identifying potentially fundable projects. Information sources include specialists, local leaders and factors such as market price changes, future demand projection, policy priorities, etc.

**PREPARATION:** Preparation has two parts: A pre-feasibility (qualitative, subjective analysis) study and a more detailed analysis. Major objectives are defined and alternatives to achieve the same objective explicitly addressed. If promising, detailed planning and analysis follow. With large projects, an investigating team including experts is crucial. Screening ensures that the project is technically and economically viable, and compatible with existing systems, resource use, and the social dynamics of the area.

**APPRAISAL** (*ex-ante* analysis)**:** After detailed analysis, an independent team conducts a critical appraisal. This team re-examines every aspect regarding feasibility, soundness and appropriateness and might recommend further preparation work if some data are questionable or some of the assumptions are faulty. Approval of a project triggers the required set of implementation actions.

**IMPLEMENTATION:** It is usually subdivided into several stages: The first stage is an investment period of 2-5 years during which major fixed investments are made, most staff is engaged, equipment procured, etc. The major benefits are expected to flow after this stage. A development and monitoring period subsequently follows. Adjustments could be made as required. Completion or maturity of a project can be as long as 25 – 30 years from the start, during which periodic benefits and costs continue to accrue, and impacts are more apparent and measurable.

**EVALUATION:** Evaluation or impact assessment involves measuring elements of success and failure. This establishes the results of projects, both intended and unintended, and the differences, positive and negative, on society. A project seldom results only in direct impact and only for project beneficiaries. Effects often include secondary impacts such as increased income earned by participants, labourers, professionals working on the projects, etc. Employment linkages could occur in up- and down stream activities and a range of external effects, which could include environmental, ecological, institutional and social impacts. Evaluation provides lessons- for future project planning and analysis. It can include on-going monitoring, or take place after completion of a project. An independent team is usually tasked to evaluate the extent to which objectives and specifications were met.

Project analysis can be divided into seven inter-related modules or elements. These represent a comprehensive attempt to identify relevant processes, data and information that quantify benefits and costs. It is used to identify analytical elements for each stage in the project cycle:

(i) **TECHNICAL ASPECTS:** Physical inputs and outputs of goods and services and technical relations. Experts provide information on supplies, productivity, and input/output coefficients.

(ii) **INSTITUTIONAL/ORGANISATIONAL ASPECTS:** Appropriateness of the institutional setting (rules of conduct). Participant custom/culture is to be understood and accounted for to increase adoption and success. Aspects include land tenure, farmer organisations, authority, and responsibility.

(iii) **SOCIAL ASPECTS:** Evaluates broader implications; resource and income distribution, job opportunities, losers and gainers per social group, gender issues, impact on social organisations, change in labour and quality of life, i.e. water, health, education, etc.

(iv) **COMMERCIAL AND BUSINESS ASPECTS:** Demand for the product, effects on prices, processing and value adding effects, effects on the market (domestic/export), and quality of the product. Input supply and demand issues include securing supplies, inputs, financing, etc.

(v) **FINANCIAL ASPECTS:** Most data must be translated into financial norms for comparability. Market prices are used. Includes effect on participants, community based organisations (CBOs), corporations, project agencies, and the national treasury. At farm level, financial data is handled in farm budgets while organisations have financial accounting systems.

(vi) **ECONOMIC ASPECTS:** The most important factor in ultimately determining the impact of any investment in agriculture. Includes project value from society's viewpoint and the efficiency with which scarce resources are allocated. Opportunity costs are used.

(vii) **ENVIRONMENTAL ASPECTS:** Deal primarily with biological and physical environmental impacts, i.e. irrigation impact, disease, scenic beauty, preserving unique plants, animals, etc.

### 3.3.3 Causes of project failure

Throughout the seventies and eighties agricultural growth worldwide continued due to improved technology, programme planning and extensive public sector investment in rural areas. Respected development experts (i.e. Chambers, 1974; Lele, 1977) agreed that developing countries could not afford to ignore the project approach as a model for agricultural and thus economic growth. Project-type of investment dominated the development agenda until the early nineties. Public investments in input and mechanisation support, credit, transport, infrastructure and settlement (typical projects) were made through ministries, parastatals, development agencies or combinations of these. Agricultural growth, even in sub-Saharan Africa, was evident during stages of this period. However, cost benefit analyses confirmed price distortions and limited economic merit in these projects. Repeated failures plagued many of these development projects that were sociologically ill informed, ill conceived or poorly implemented (Gittinger; 1982; Tisdell, 1985; Cernea, 1991; Carruthers & Kydd, 1997). This led to the use of projects

diminishing during the late eighties (Carruthers & Kydd, 1997). As described in the previous section, projects were viewed as instruments promoting development and change, altering major constraints through co-ordinated actions originating from a policy decision. Project interventions aimed at improving livelihoods through activities that use resources to gain benefits. Given the described theoretical potential for development that the project approach clearly offers, the obvious question is why the practical application has so often delivered disappointing results.

During the eighties and early nineties agricultural projects managed by parastatals in SA promoted effective resource and labour use. These projects aimed at establishing a business-corporate type of rural class that would use sophisticated, capital intensive methods (Van Rooyen, Vink & Christoudolou, 1987). Particularly in the homelands a variety of projects, with the goal to establish independent farmers were initiated. Examples in the North West Province include the Sheila-Mooifontein and Taung projects. Also in other homelands such as Transkei, Kwazulu and Venda selected community members were settled as 'project farmers', 'managed' under the control of corporate project management. Agricultural development corporations were invariably established to execute these projects (Van Rooyen, Vink & Christoudolou, 1987; Binswanger, 1994). The philosophy of optimal resource use through modern, scientific farming methods led to a heavy reliance on capital and management. Sophisticated mechanised systems using, for example, tractor fleets, advanced milking parlours and high value cash crops were developed. Whilst optimal food production obviously was a major objective, creating the perception of independence was also highly important. This encouraged the use of high input technology and extensive external management (Van Rooyen, Vink & Christoudolou, 1987). Farmer committees officially assisted project management in decision-making. In Bophuthatswana these farmer committees were in general not actively engaged in project management (Worth, 1994).

Generally, the strategy did not succeed in developing a class of self-reliant farmers in SA and farm businessmen did not evolve, whilst stable production was seldom achieved. Corporate-managed settlement projects in general failed to generate sustainable development. Increasingly projects were seen as inefficient in terms of, fiscal affordability, developing entrepreneurs and overall rural development (Van Rooyen, 1995). In retrospect, the objective of establishing commercial farmers in the homelands under the prevailing political economy was unrealistic. Homeland farming served mainly to supplement household entitlements in the form of food, goods for trade and barter, and income from selling and savings through food production. Opportunities in other economic sectors were generally viewed as more attractive. The aim of commercialism diminished given this agricultural reality. A fixation with perceived optimal farm size and income levels, a management style of control rather than facilitation, participant selection according to political affiliation, insecure tenure, and deficient support also contributed to project failure (Van Rooyen, Vink & Christoudolou, 1987; Van Rooyen, 1994; Binswanger, 1994).

However, limited success achieved with the approach in SA can to a large extent also be attributed to the lack of political commitment to the development of independent, middle class farmers (Bembridge, 1988; Van Rooyen, 2000) and the resulting lack of facilitating policy, as described in Chapter 2. Administrative

problems (weak management) and the unfavourable policy environment, where farmers' incentives were compromised played a key role.

As stakeholder integration is fundamental for sustained growth, progress was also inhibited by inadequate participation as described by many authors (e.g. Botha & Coetzee, 1992 and 1993; Kirsten, Van Zyl & Sartorius von Bach, 1993; Van Rooyen, 1994). Generally planning was done in a 'top-down' manner, without sound consultation of beneficiaries, resulting in a lack of ownership (D'Silva & Bysouth, 1990; Botha & Coetzee, 1993; Van Rooyen, 1994).

Given this constraining environment, the term 'bad projects result from bad policy' reflects the reality of the time (Van Rooyen *et. al.*, 2002). In the main, a failure by initiators to adapt to the social environment and introduce participative development strategies resulted in farmers not being actively involved in their own development. The human factor was subordinated to the urgency of technological and political considerations. To a large extent development was done to and for farmers and was largely imposed by higher authorities (Van Rooyen, Vink & Christoudolou, 1987; Binswanger, 1994; Worth 1994; Anandajayasekeram *et. al.,* 1996).

A critical view would conclude that a successful large-scale project in a less developed area is difficult to achieve, given a lack of agricultural, financial, managerial and institutional capacity. However, elementary mistakes were often made in project planning and implementation. Many project failures can simply be traced to poor preparation, selection and/or implementation, leading to inefficiency. Participants were often not convinced they would benefit from a project and consequently would not commit fully to it. Often the same elementary mistake of not taking aspects that focus on participation and empowerment into account were repeatedly made (Van Rooyen *et. al.*, 2002). History therefore records the failure of the so-called project approach despite the fact that the concept proved to be sound. Summarised aspects of project failure, as described by various authors above, are:

Externally (top-down) driven initiatives, causing lack of ownership, responsibility and participation
Inadequate design, implementation or support/administration systems (management)
Unsupportive policy environment, i.e. poor infrastructure and inhibitive land tenure
Failure to appreciate the social and political environment and unrealistic expectations.
The use of inappropriate technology and/or infrastructure.
Problems related to poor project analysis.

Although the objectives and intentions of the project approach were mostly sound, it generally failed to raise welfare in rural areas. While projects often resulted in short term higher yields, it did not result in an independent middle class small farmer, as aimed at since the Report of the Tomlinson Commission (Bembridge, *et. al.*, 1982; Brand *et. al.*, 1992; Van Rooyen, 1993; Van Rooyen & Nene, 1996). Relatively few people benefited, given the numbers of small holders, and recurrent costs were up to four times as high as incomes achieved by participants (Bembridge, 1988).

### 3.3.4 The future of the project approach?

The importance of an integrated agricultural system for economic growth and development is emphasised by analysis and it can be argued that agricultural projects as interventions to structure change still constitute an important means to alleviate poverty (D'Silva & Bysouth, 1990). In an evaluation of a decade of World Bank sponsored development projects, the importance of the project cycle as guideline for proper project planning, appraisal and evaluation is stressed (Anon., 1987). Not acknowledging this well-known process for sound implementation of projects lead to many failures in the past. The project framework is still a major part of development strategy and most World Bank projects are planned and evaluated according to the principles of the project cycle (Anon., 1987; World Bank, 2000). The FAO also utilises the approach extensively and has recently updated their "Windasi user manual"; a software programme which facilitates financial and economic evaluation of projects. Recent policy adaptations and guidelines, as described in the Strategic Plan for South African Agriculture, also point towards the project approach as a viable alternative for development. This strategy places a premium on linkages and integration of stakeholders and describes forward and backward linkages as crucial for development.

Given the previous political system that actively inhibited the development of a viable, sustainable small-scale sector, the failure of the project approach should not be surprising. Good projects from bad policies are therefore virtually impossible. The recent eradication of inhibiting policies, as described in the previous chapter, opens the door for another evaluation of the project approach. Given 'good policies' the more facilitating environment for 'good projects' should now promote development. Development requires higher agricultural production, more opportunities and more participation. All these key aspects could be achieved through a sound project approach. The project approach therefore remains an ideal instrument to 'unlock the potential' in a developing area, through managerial, institutional and other inputs, for optimal agricultural production from a number of selected participants, with the contributed impact of enhanced livelihoods in the community. Projects are a potential solution to the problem that developing agriculture is not contributing to economic development to the extent required.

However, to avoid the mistakes of the past, the original project cycle described by Gittinger (1982) must be adapted to facilitate participation by selected farmers throughout the project cycle (FAO, 1992; Van Rooyen, 1994; Botha, 1995). This is to involve participants, facilitating their articulation of their requirements. The popularity of the participatory approach is based on the assumption that it eliminates 'top-down' overemphasising of technical aspects; values inputs from beneficiaries, incorporates local knowledge and increases commitment, sustainability and utilisation. Group dynamics create additional benefits such as reducing suspicion, exposing divergent views, sharing responsibility and facilitate assessment of local interrelationships (Anandajayasekeram *et. al.,* 1996). Communication and linkage between all stakeholders must be specifically addressed (Botha, 1995), even more so if the objective is integration. Linkage problems seriously reduce institutional performance and are costly (Souder, 1980), while effective linkages expands economic and social returns on investments (Van Zyl & Van Rooyen, 1995; FAO, 1995). This requires deliberate mobilisation and capacity building to ensure sound projects

addressing real needs. This process takes time, but enhances sustainability and value (Van Rooyen, 1986). Only then will projects address economically viable preferences of farmers and therefore be inherently sustainable. Simply put: Focus should be on the farmer as well as on the enterprise.

It is now also acknowledged that extensive consideration of sociological and anthropological aspects are required for development as it facilitates project adaptation to existing socio-cultural conditions. Recognising the centrality of people in projects is not rhetoric, but must be a key development paradigm. For projects to be successful, economic and social objectives need to be balanced (D'Silva & Bysouth, 1990). Social knowledge brings complementarities to projects, as social science must be converted into operational know-how (Dusseldorf & Box, 1990; Cernea, 1991).

Another element that often lead to the failing of projects, but which has not been identified in most analyses, is the aspect of rural household diversity as discussed earlier. Very seldom was the need for selection of homogeneous groups in terms of attitude and aptitude addressed in project planning. This meant that the participants did most often not share exactly the same constraints, did not have the same opportunities and did not strive for the same goal. However, if these aspects are dealt with, the approach surely has potential as a development strategy.

In conclusion; although agricultural policy has become much more facilitating, accessibility is still limited, as institutional settings, the vehicle for support delivery, are lacking. Public facilitation is therefore required. The project approach is an ideal instrument to 'unlock the potential' in a developing area, through managerial, institutional and other inputs, for optimal agricultural production from selected participants with the contributed impact of enhanced livelihoods in the community. Integration between stakeholders is now more important than ever to lower cost and facilitate smallholder access to services and resources. Given the fact that policy is now geared towards the small-scale farmer and the valuable lessons from experience dealing with participation, linkages, social reality and diversity, projects could bring direction to development and facilitate managerial skills, productivity and empowerment. The project cycle must be extended to facilitate participation. Selection of homogeneous groups in terms of attitude and aptitude must in future also form part of the cycle. With the proper attention to detail and elimination of the mistakes discussed, projects should be viewed and could indeed be utilised as the "cutting edge" for development in the agricultural environment. The approach focuses resource utilisation, the application of appropriate technology, group organisation, resource and service access, creation of production and managerial skills and a productive agricultural model. It therefore offers an allocation system to direct scarce resources and a management framework for successful integration and co-ordination of the elements required for development of the small-scale agricultural sector, given the particular access constraints the sector has to deal with. It is especially useful for small-scale farmers with the low opportunity cost of communal land and labour that so characterises the sector. Key issues related to this "cutting edge" ideal are discussed in the following section.

## 3.4 Redesigning the project approach for agricultural development:

### 3.4.1 Introduction

It has been established that the small-scale agricultural sector has been significantly inhibited in SA, particularly due to limitations in access to land and support services. It was also established that small-scale producers could potentially contribute to agricultural production and more importantly, that this sector had a crucial role in agricultural growth and economic development.

Significant policy changes addressed small-scale access to land, support, etc., and agricultural growth is now recognized as an important part of economic development. However, while a more facilitating environment has been established in theory, small producers in general have less access to resources today than before the democratisation of the early nineties (personal communication, Dr. Van Rooyen, ABC, 2002). This is a result of a lack of focused support programmes and the dismantling of agricultural schemes.

Innovative agricultural development strategies are therefore urgently required. One such setting, specifically focuses on lowering costs through integration in the value-chain: It will thus be proven in this section that integration between role-players in agricultural production through the project approach fits perfectly within the new policy focus. It will also be illustrated that lessons from previously failures were learnt and will facilitate sound project implementation. As integration within the agricultural industry is a policy priority, projects could bring direction to development. The project approach model was consequently designated as potentially an appropriate model for smallholder support.

The findings of the study thus far can therefore be summarised as six building blocks for the redesigning of the project approach in agricultural development:

I: Agriculture has a key role to play in transformation and thus economic growth.
II: A focus on human capacity development is required
III: Access to agricultural support services and resources (land, capital, etc.) is required.
IV: Facilitating policy and a conducive environment for viable small-scale farming is finally developing.
V: Dealing with rural economic diversity in agricultural development programmes is a prerequisite for a viable small-scale agriculture.
VI: Integration of role-players in agricultural production, to mitigate high cost, can facilitate human capital development and access to services and resources, create a conducive environment, facilitate diversity quantification and provide the catalyst for viable small-scale agriculture.

### 3.4.2 Project design criteria

The analysis of development history and direction given by policy in the previous chapter dealt with results from a variety of analytical studies, policy documents and scientific papers. Several key findings were reached. These essentially described the 'rules of the game' i.e. the principles of agricultural development, as they evolved since the early 1950s. These derived rules, are to be incorporated in a framework for project planning, implementation and evaluation (i.e. sound application).

These key findings have direct bearing on the hypotheses that rural household diversity in access to resources and services due to economic status, must be quantified, and that a project approach as agricultural support model to lower costs, still has application. These findings are now incorporated into a proposed framework for project planning, implementation and evaluation. In other words: The aim of this study is to prove that a support strategy based integration of stakeholders in a project approach, quantifying economic diversity, is required for agricultural development.

Therefore, major findings related to agricultural support strategies are refined into "project design criteria" in order to guide project design, appraisal and implementation processes. Four comprehensive design criteria, as described below, were identified. To test the validity of these criteria, they will be discussed in depth during the *ex post* analyses of the Sheila project and validated in an *ex ante* evaluation of a project proposal. The four design criteria read as follows:

**1 Technical aspects of a project should be reconcilable with social realities**

Various aspects are relevant for this criterion: Is the stage of agricultural development of the target group recognised and does the intervention fit this development stage? Is the specific role that agriculture plays in the livelihoods of the target group recognised and is the commitment needed for the project realistic? Are the major disruptive effects of impacts such as HIV/Aids on production and lost remittances accounted for in project specifics?

**2 Diversity should be recognised and a typology approach implemented**

Rural economic diversity in the target population must be described to identify and consequently empower homogeneous producer groups. Differences regarding access to resources, services, aptitude and attitude must be quantified into focused support measures according to type requirements.

**3 Stakeholders linkages/co-ordination should be facilitated & structured**

Depending on the particulars of a project, specific stakeholders should be involved in the planning and implementation phases. How their involvement is structured so that all parties gain optimally

should be negotiated. Linkages between participants, service providers, buyers, etc., to facilitate efficient access to input and output markets should be agreed upon (i.e. is a conducive environment created) and savings/value adding measures to lower costs should be facilitated.

**4 Skills development (HCD), participation as well as social and economic sustainability should be institutionalised**

Communication and dialogue between stakeholders should be structured; i.e. particular functions and model of a representative forum should be determined. Representatives from a CBO should be empowered to participate effectively in project management. Selection and empowerment of participants should be initiated according to scientifically determined requirements whilst study groups should be formed to address adaptive on farm research, etc.

### 3.4.3 Comparing design criteria with a systemic evaluation framework

The Development Bank of Southern Africa (DBSA), established in 1983, is an important role-player in agricultural development. Its key purpose is to address socio-economic imbalances and help improve the quality of life of the people of Southern Africa. Its mandate is to facilitate provision of infrastructural development finance; finance sustainable development in partnership with the public and private sectors; respond to development demands and act as a catalyst for investment (www.dbsa.org). As a leading change agent for accelerated and equitable socio-economic development in Southern Africa, the DBSA recognises the principles of sound economic and rural development.

During the 1990s, the DBSA developed a so-called set of 'decision rules', accommodating operational and political considerations, as these issues impact significantly on agricultural development. Certain similarities between these decision rules and the design criteria established in this study are therefore logical. A comparison between the two sets of 'rules' could therefore be valuable. The DBSA decision rules take the form of a sequence of questions addressed at potential project developers, in order to address vital prerequisites required for the establishment of economically viable, socially sustainable development projects.

Given the political scenario during the 1980s and 1990s in SA, these questions were highly relevant, as economic development is influenced by political and economic policies. The aspects dealt with in the decision rules were designed to raise issues in a logical manner. The first eight criteria deal with macro issues in a fairly robust manner. The next set of criteria is dealt with at appraisal stage in a more detailed fashion. It is unlikely that projects will comply perfectly with all criteria and decision-makers were to decide on acceptable deviations.

Question 1: Is there a fit (reconciliatory aspect) between the objectives of the major participants?

The objectives of parties involved in a project (usually two or more), most often vary. Ensuring sufficient complementarity between the objectives of role-players is required. It was established in this study, as expressed in the project design criteria, that farmers differ significantly in their approach, as a result of differences in access to services and resources. A scientific description of homogeneous focus groups (with similar objectives) to facilitate focused and appropriate support is therefore needed. The project design criteria further emphasis the structuring of sound linkages that amongst other purposes, facilitates a forum in which complementarity of objectives should be achieved.

Question II: Is there a policy fit?

A project must fit the major player's (including NGO's) interpretation of policy. Especially operational "policy positions", i.e. on farming models, user charges, etc. should not differ. In the Strategic Plan for South African Agriculture this is addressed. It is argued that a pro-active policy stance is required, as subsidies are fiscally unsustainable. Services required are often interdependent and must be integrated. Stakeholders (credit institutions, input suppliers, processors, etc.), should be linked closely to producers (NDA, 2001b), again illustrating the importance of linkages as argued in the design criteria.

Question III: Is there a programme fit?

A project must fit the development programme of all stakeholders to ensure optimal linkages and multipliers in an integrated framework. This would eliminate duplication and promote co-operation. The same argument as in the previous question is relevant. The design criterion of facilitation of sound linkages between stakeholders is relevant to enhance acceptable development programmes.

Question IV: Is there evidence of market or government policy failure?

Market failures relate to situations in which markets for goods and services fail to be perfectly competitive. Governments often add to these distortions by initiating policies (i.e. protective tariffs or subsidies). When these measures to alter prices are inappropriate, insufficient, or excessive they causes more distortion, constituting government failure (Van Rooyen, *et. al.,* 2002). When markets operation is thus interfered with, market prices do not reflect economic scarcity values. A project should intervene in the economy only where market or government failure exists, aiming to remedy market failures. Government failure is mostly rectified at policy level. Imperfect markets often lead to inefficient or inequitable results and interventions could then lead to greater efficiency and equity. This aspect is not dealt with directly in the design criteria.

Question V: Which institution is the appropriate source of finance?

According to the decision rules, the public sector should fund operational/recurrent development costs, e.g. salaries, etc. However, partnerships with finance institutions and the private sector should be addressed: if commercial financing is available and appropriate, it should be accessed. The design criteria of stakeholder linkage facilitation and economic sustainability complement this.

Question VI: Who "owns" the project?

The project must have the support of the target group/s and be a priority. There must be ownership through participation and involvement by beneficiaries throughout the project cycle. It has been established in this study that one of the major causes of the failure of the project approach, has been the lack of 'ownership' of participants. This is therefore dealt with in the design criteria in terms of participation elements, technical aspects having to be reconcilable with social realities and human capital development.

Question VII: Who gets the benefits and who incurs the costs?

Although secondary players could also gain benefits through a project, the target group must predominantly receive benefits. Communities incurring unintended costs must be compensated. This is addressed with this question. In this study it has been established that while projects often resulted in higher yields, it did not result in an independent middle class small farmer and relatively few people benefited. The design criteria do not deal with this aspect specifically, although the linkage criterion addresses the structure of participant involvement so that all parties gain optimally.

Question VIII: Is the project financially affordable?

There must be budgetary provision. Project participant, borrowers, or farmers/small business should be in a position to sustain the operation and maintenance of the project. This decision rule is self-explanatory. Again the design criteria do not address this directly, but social and economic sustainability is dealt with.

Question IX: Do economic benefits exceed economic costs?

To achieve sustainable economic growth, the social benefits, derived from a project must exceed social costs. Therefore, all benefits and costs (including indirect aspects) must be described clearly. As part of the project cycle discussed in this chapter, the vital element of cost benefit analysis is stressed. The design criteria again highlight the importance of economic sustainability.

Question X: Are the project benefits sustainable?

The project must be financially, technically, institutionally, environmentally, socially and politically sustainable. Benefits must be distributed fairly to ensure that equity considerations are met and the implementation of the project can be sustained through participation. This is supported by the major findings of this study, as refined in the design criteria, specifically dealing with human capital development and sustainability.

Question XI: Is it the "best" alternative?

The project must be seen to be the optimal solution to the identified set of problems and objectives. Benefits and costs of alternative models should be compared to determine the optimal solution. This again forms part of project planning, implementation and analysis, as discussed in this chapter.

In summation, the first three questions of the DBSA rules aim to establish a common macro-purpose by scrutinising objectives, programmes and policies. A common goal is required for sound linkages and eventually a successful project. Projects should address market failure and this is dealt with in question four while question five deals with the source of finance in which government should have a specific role. Questions six and seven deal with the aspect of participation while questions eight and nine deal with financial and economic viability respectively. Question 10 deals with sustainability and 11 ask if the project is the optimal solution. Similarities between the design criteria proposed in this thesis and the set of decision rules developed by the DBSA, are specifically evident with regard to linkages between stakeholders, participation and sustainability. Whilst the DBSA rules focus on common ground between stakeholders, financing and financial/economic viability, the design criteria focus more on the sociological/development perspective.

The project design criteria proposed in this thesis do however raise a "new" issue. The aspect of quantifying diversity definitely deserves attention and this is being dealt with in depth. Furthermore, the importance of empowerment of rural communities through human capital development is given specific attention. Another aspect that is given priority is reconciling technical innovation with social reality. The level of technological change used in a project, must be reconciled with the social fabric of the community involved. Aspects such as traditional values, tenure systems, literacy and education must be taken into account. Participative research within a farming systems context, could quantify these issues and the specific role of agriculture in a particular community. These aspects have an impact on any project and must be qualified.

### 3.4.4 Incorporating the proposed design criteria in the project cycle

It has been established in this study that project failure in the past resulted to a significant extent from insufficient attention to proper implementation and recognition of social reality. To rectify many of the failures experienced with projects, the guidelines of the project cycle should be implemented effectively. More importantly, the project cycle should incorporate this study's project design criteria which specifically address social issues, human capital development and linkages. A particular focus should be addressing economic diversity in a community where a project is planned. A typology to describe homogeneous farmer types, to facilitate needs-based support is a adaptation proposed with this study. These adapted project cycle guidelines must however be implemented effectively. It is argued that if these guidelines are incorporated in project planning and implementation, projects would contribute to agricultural growth.

During the **project identification stage**, diagnostic surveys and constraints analysis results in the identification of priority problems, which may lead to a potential project. A description of social realities and how technical innovations could impact on these should form part of this phase. Potential role-players could be identified and the complementarity between the objectives, policies and programmes determined. How co-ordination could be structured and linkages optimised should already be investigated, especially in terms of how institutional aspects would be dealt with (see table 3.4.1). A preliminary investigation into economic diversity of the community and possible support measures for different groups should form part of this phase.

During the **preparation phase** (consisting of a pre-feasibility study and a more detailed analysis), objectives are more clearly defined and alternatives investigated. The project 'fit' to the objectives, programmes and policies of all stakeholders (including farmers) as well as co-ordination and linkage mechanisms is analysed thoroughly. Project 'fit' is determined as part of "screening" of alternatives: The criteria dealing with technical, financial and economic viability, compatibility with existing production systems and resource use patterns, as well as social/cultural considerations are to be taken into account to determine the best 'fit'. Especially in terms of the technical and institutional aspects (table 3.4.1) the feasibility of a project needs to be determined. How participation and empowerment is to be structured, the appropriate funding agent and sustainability should also be dealt with. A more in depth investigation into the diversity within the targeted population should also be attempted. During this analysis, the determination of a farmer profile through a typology would be of significant benefit in quantifying economic diversity through determining the role of agriculture in the household.

During the **appraisal phase** of the project, a detailed report on the analysis dealt with in the preparation phase is evaluated. An independent team conducts a critical review of all aspects of the report. This team should engage with potential project beneficiaries as well as with other stakeholders, to determine the conditions for sustainable implementation and project impact. It may recommend further preparation work. The analysis of diversity should during this phase result a functional typology of farmers. A thorough description of social reality and the link with proposed technical innovation should also be

completed while the particulars of linkages and co-ordination should be spelt out. Strategies for human capital development must also be specified. An thorough investigation of the social, commercial financial, economic and environmental aspects is also required (table 3.4.1).

The **implementation phase** requires rigorous analysis throughout, in order to maintain a realistic project management plan. Implementation is usually subdivided into an investment period of 2-5 years during which major fixed investments are made; a development period, with monitoring of activities and with adjustments as required. During this phase it is again vital that co-operation and linkages as well as participation remain on the forefront. Especially during monitoring of project activities, which should be an integral part of the project cycle, all the design criteria should be evaluated.

During the **evaluation phase**, that could take place at any stage, or after completion of the project, an independent evaluation team measures success, evaluating all aspects from the technical to the environmental (table 3.41). This determines the extent to which original objectives and specifications are met. Impact assessment analyses the results of projects, both intended and unintended, and the effects, positive and negative on society. Again the design criteria could be used as indicators of success or failure. How the proposed project design criteria fit the project cycle is illustrated in table 3.4.1.

Table 3.4.1: A summarised description of the role of project design criteria in the project cycle.

| Evaluation module | Relevant design criteria | Actions to be taken |
|---|---|---|
| Technical:<br>Inputs and outputs of goods and services | Linkages/co-ordination | Local forum facilitating integration<br>Infrastructural arrangements |
| Institutional:<br>Appropriateness of institutional setting – accounting for culture | Co-ordination structuring:<br>Compatible objectives, policies, participation & HCD structuring, diversity investigation – typology | Consultative forum<br>Typology development<br>Inclusive project management<br>Structured study groups<br>FSR-E projects |
| Social:<br>Resource and income distribution; employment, equity & quality of life | Participation, HCD<br>Technical/social compatibility<br>Equity, diversity & sustainability<br>Linking a typology to appropriate support | Inclusive project management<br>Study group approach<br>Livelihood analysis/typology arrangements<br>Project planning |
| Commercial:<br>Product demand, price effects, input supply | Linkage with markets | Market analysis<br>Co-operation/integration<br>Adaptive & on-farm research |
| Financial:<br>Effects on participants, corporations, etc. | Technical vs. social aspects | Farmer budget<br>Organisational accounts |
| Economic:<br>Broad impact of public sector investment | Technical vs. social aspects<br>Compatible objectives/policies<br>HCD | Comparing alternatives<br>CBA<br>Public-private sector co-operation |
| Environmental:<br>Biological & physical environmental impacts | Sustainable resource use | EIA, livelihood analysis, CBA, etc<br>Adaptive & on-farm research<br>Study group programmes |

Note: These aspects are to be dealt with during all phases of the project cycle, including the identification, preparation, appraisal, implementation and evaluation phases.

### 3.4.5 Conclusions

Tomlinson, during the 1950s, proposed the facilitation of access to resources and services (through a project approach), to empower small-scale producers. While an environment conducive for a viable small-scale sector is finally developing early in the next century, this has yet to benefit resource-poor producers.

However, innovative support strategies are required as access to services is inhibiting economic growth. It is hypothesised in this study that a project approach that specifically deals with economic diversity and integration of role-players in the sector to address high cost would constitute such a strategy. It was further established that specific aspects should be addressed: The project cycle should be extended to include the project design criteria condensed from lessons learnt. This includes facilitating linkages, co-ordination, participation, classification and empowerment through human capital development.

In this model, top-down weaknesses are eliminated, inputs from beneficiaries are valued, local knowledge is incorporated and commitment, sustainability and utilisation is enhanced. Participatory planning and development is a fundamental building block for sustained growth. Participation of beneficiaries at all stages of the project cycle is critical to ensure success. Project planning must accommodate this. With the proper attention to detail, noting the lessons from previous failures, sound policy and institutions, projects should be viewed and could indeed be used as the "cutting edge" for development in the agricultural and rural environment. One condition would be rigorous implementation of the proposed project planning and implementation cycle, and a focus on institution building to ensure the sustained implementation of this cycle.

Although many of the elements isolated have been highlighted separately in a variety of studies over the past decade, the compilation of these principles into project design criteria constitutes a significant shift in development strategy. Engaging effectively with a developing community to facilitate a participatory determination of constraints, farmer types and objectives per group, should form part of project development. The integration of farmers into study groups, based on respective farmer types in a typology, facilitating human capital development and confidence, as well as real integration with a number of stakeholders, including private interests, will be a relatively new approach in South Africa.

Whilst economic growth is an important aim of any agricultural project, it is accepted that achieving this aim does not inevitably lead to improvement in living conditions for all in a project area. Whilst a project can, and in the past has caused disparity, despite of overall growth, incorporating the project design criteria would reduce this risk. Although addressing diversity and transaction costs specifically would not ensure success and equitable growth, it would enhance a project's potential to do just that, especially when this is enhanced through sound institutionalisation of the approach.

# CHAPTER FOUR: A METHODOLOGY FOR INTEGRATED AGRICULTURAL PROJECT PLANNING

## 4.1 Introduction

The purpose of this study is to prove that support based on a redesigned project approach, an intervention to facilitate access to support services and resources for committed groups of farmers, as part of participative planning and management should still be a productive instrument in agricultural development. In this chapter a comprehensive methodology for project planning, implementation and evaluation will be described. This methodology will include adaptations proposed to deal with economic diversity. The project design criteria identified in the previous chapter will form part of the project design, appraisal and implementation methodology dealt with. A framework for successful planning and evaluation of the project approach is therefore developed in this chapter. Such a framework is crucial as policy demands sound allocation of public resources, emphasising equity, efficiency and accountability (Anandajayasekeram *et. al.*, 1996; Wessels, 1998; Marasas, 1999). Impact assessment deals with comparing the situation of a project and a 'without scenario', to determine incremental net benefit, to facilitate planning, restructuring and problem identification. Impact implies movement towards defined objectives, necessitating criteria for evaluation. Defined targets, procedures, goals and indicators, determined in advance, are such criteria (Gittinger, 1982).

However, the relationship between an agricultural project and its impact on participants and society is complex. Benefits are often derived from a combination of complementary investments and actions over time. No single analytical method can capture all potential benefits and costs (Anandajayasekeram *et. al.*, 1996). Different enquiry systems are therefore required to comprehensively analyse developmental problems. The traditional Leibnizian approach requires that only data needed for formal models be collected. With the Lockean system, the point of departure is that models are developed from facts, exposed through empirical data. A feature of Kantian investigation systems is combining empirical data with a theoretical model, as used in the cost-benefit approach. In the Singerian approach a holistic view features and a variety of methods are used (Mitroff & Turoff, 1975) as quoted by Van Rooyen (1983). A quantitative approach is formalised and controlled with its range clearly defined. Quantitative studies emphasise measurement and analysis of causal relationships between variables, not processes. For sensitive issues this can create suspicion and generate misleading information (Chambers, 1994), somewhat limiting its use. In many cases resource poor farmers have no clear concept of quantitative measuring tools, further limiting their use. In contrast the qualitative approach has less strict procedures and a more open range. It implies emphasis on processes and meanings with less focus on measuring quantity, intensity or frequency, stressing the socially constructed nature of reality. In the light of this philosophical perspective, a combination of qualitative and quantitative enquiry systems is used to ensure a viable, comprehensive perspective in the impact assessment of the Sheila project.

## 4.2 A comprehensive impact analysis framework

This study proposes a comprehensive project approach that will facilitate access to resources (inputs, credit, etc.) and services (management, empowerment, etc.). It argues that resources utilised accordingly have optimal impact.

The Sheila project, one of the first and most extensive examples of a development project in the North West Province, is the selected case study. Its assessment will illustrate that the approach could be an economically viable investment with potential for the future, especially if realigned with the adaptations proposed.

A systemic analytical procedure is used, since a significant number of factors need to be recognised. These include infrastructural; social; enterprise; economic; political and cultural aspects, combining knowledge from various fields. A combination of complementary qualitative and quantitative enquiry systems is used to ensure such a holistic perspective.

Analysis before an activity (*ex-ante*) or after its completion (*ex-post*) differs in purpose. Ex post assessment evaluates impact, provides feedback and establishes accountability and credibility (Anandajayasekeram *et. al.*, 1996). With the *ex post* evaluation of this study, the criteria applied at Sheila will be determined. In essence, the various types of costs and benefits of the project will be established.

The farmer-types described through a typology will consequently be subjected to a logical framework analysis (LFA); as part of an *ex ante* impact study, describing strategies for each type based on the project approach. These strategies will be evaluated as base for support recommendations. An appropriate institutional structure for projects will also be described. This chapter is summarised in a table, describing the different criteria, the evaluation methods used as well as the data required for analysis.

A thorough impact of the Sheila project since 1976 (*ex-post* analysis) and an (*ex-ante)* analysis to determine the impact of the proposed strategy is dealt with. The analysis framework is graphically illustrated in figure 4.2.1. It evolved from a series of impact assessment assignments pioneered and applied in the analysis of a range of developmental issues in agricultural and rural situations within the South African scenario (Van Rooyen, 1986; Anandajayasekeram, *et. al.,* 1996; Wessels, 1998; Marasas, 1999; Esterhuizen *et. al.,* 2001; Esterhuizen *et. al.,* 2002). The process is also described in a South African Training Manual developed for development practitioners by the Universities of Ghent and Pretoria, in collaboration with the Agricultural Business Chamber, namely Agricultural Project Planning and Analysis (Van Rooyen, *et. al.*, 2001).

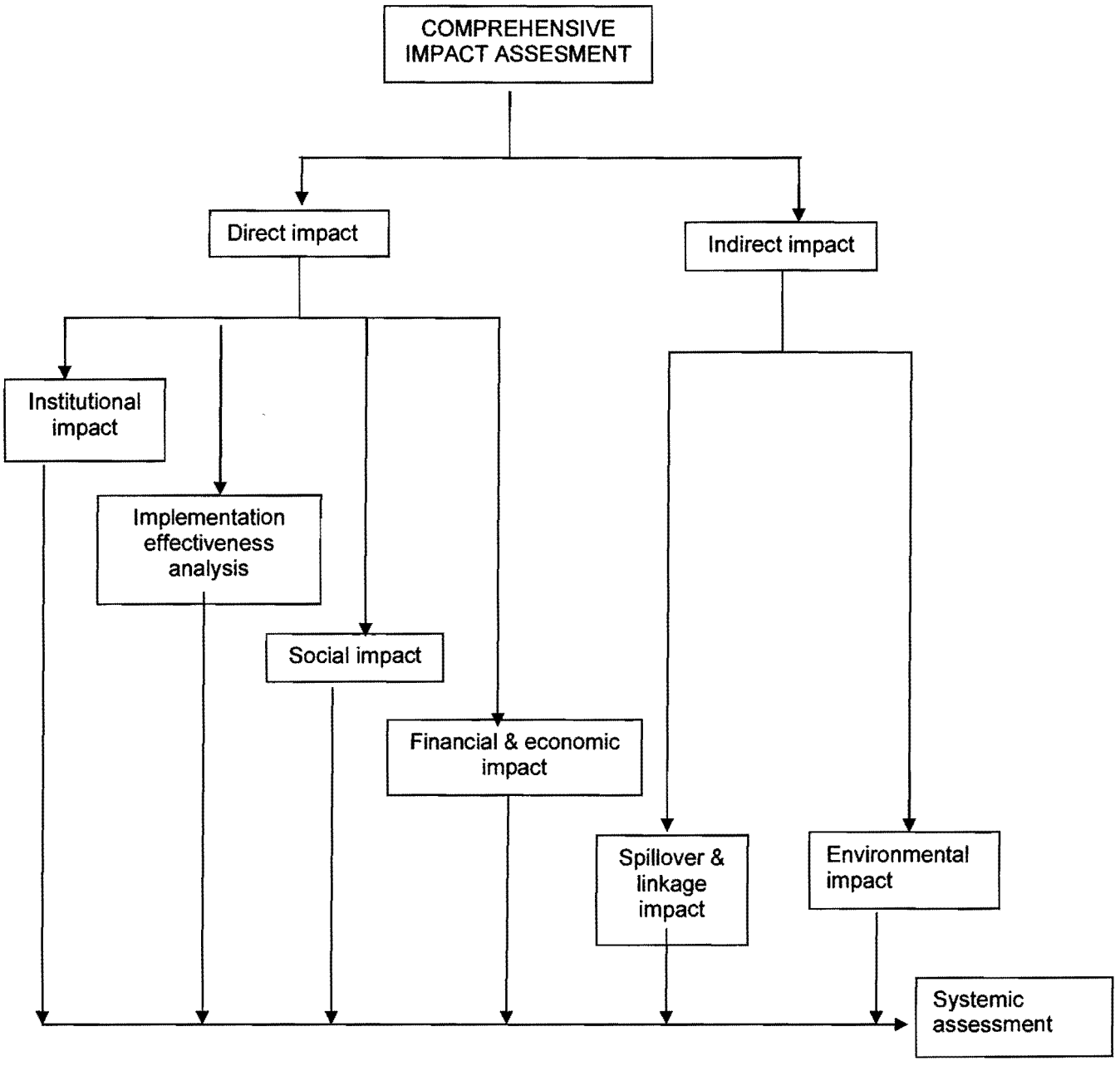



Figure 4.2.1: Framework for Impact analysis of the project approach at Sheila:

The direct impact of a project as illustrated in figure 4.2.1 includes primary benefits and costs, which entails institutional and stakeholder effects. Institutional impact deals with institutional change and changes in the enabling environment (input supply, infrastructure, etc.). Social and financial impacts essentially describe the incentive to participate. Effectiveness of the project in terms of goals attained is determined with an implementing effectiveness analysis; i.e. logframe. These and the indirect effects of the environment and linkages will be assessed qualitatively. Financial and economic impacts are assessed quantitatively. A systemic impact assessment using key questions summarises all impacts. According to Gittinger (1982), project analysis can be divided into six aspects: Technical, institutional, social, commercial, financial and economic aspects. All are addressed in the framework proposed.

## 4.3 Direct project impact

According to Van Rooyen *et. al.*, (2001) the direct impact of an agricultural development project describes the concrete institutional, financial and social implications directly attributable to the project. These derive from primary benefits and costs generated through the project intervention. Another description of direct impact is the net added value of goods and services due to the project. This would typically include effects such as improved yield and usually occur when a behavioural change is evident, resulting in effects on income, etc. (Van Rooyen, 1986). Direct impact assesses performance, measuring the degree to which the project has achieved the desired objectives (Anandajayasekeram, *et. al.,* 1996). The various forms of direct impact are discussed below:

### 4.3.1 Institutional project impact

Institutional impact forms a vital aspect of this investigation, as an efficient support services structure is highly relevant and effectively the theme of this study. This impact deals with change in organisational arrangements and services structures, funds, procedures and participation required to deliver the net added value of goods and services directly attributable to the project (Wessels, 1998). Having the institutional capacity to conduct a project is vital (Anandajayasekeram *et. al.,* 1996). With this study the changes in institutional capacity will be determined using trend analysis. Specific attention will be given to how linkages between stakeholders, participation and HCD are institutionalised, in accordance with the design criteria. Aspects such as the support services and tenure system, the role of CBOs and relevant authorities, the responsibilities of stakeholders, linkages between these stakeholders and general aspects of management will be investigated. For the *ex ante* situation, proposed services will be evaluated.

#### 4.3.1.1 Institutional change

Institutional change describes the changes occurring in managerial arrangements and the 'rules' which guide project actions: In this analysis institutional change therefore entails all managerial, procedural, administrative and organisational actions introduced to facilitate implementation of the project. Programmes initiated to facilitate extension, access to information; input and output markets as well as training programmes constitute typical institutional impacts. The design criteria dealing with the structuring of co-ordination, complementarity of objectives of stakeholders and linkages will specifically get attention. Other criteria involved are how participation and human capital development are structured as well as the recognition of social reality. Information was gathered through a variety of methods including group discussions, interviews with key informants, a questionnaire and secondary data.

#### 4.3.1.2 Changes in the enabling environment

The physical environment of the area in which a project operates is often adapted to facilitate effective implementation. This might include infrastructure changes such as access roads, buildings, mechanisation services etc. These physical changes to facilitate services will be analysed. Also investigated will be policy changes to facilitate project implementation. This could include subsidies, grants and marketing channels. This type of information was gathered through a variety of methods including group discussions, interviews, a questionnaire and the literature. Criteria involving the sustainability of the changes in the environment and how research was accommodated will also feature.

Project scale is a key variable in terms of the changing environment. Economies of scale are a function of demand for the product of the project, the resources required, the capacity of participants and changes in these factors over time. Cost saving aspects of economies of scale must also be recognised. The size of a project and that of individual holdings are key economic decisions that are often overlooked, or taken as a given. This has cost implication, but often depends on the political environment and technical realities. Often it is prudent to start a project relatively small, while subsequent managerial and technical capacity building, infrastructural and labour development, could lead to expansion (Van Rooyen, *et. al.*, 2001).

### 4.3.2. Project Effectiveness

A commonly used approach for assessing the direct product of a project is known as effectiveness analysis. This analysis describes a comparison of goals with actual achievements of a project, i.e. how effectively the various goals and objectives were achieved. This requires clear objectives and quantifiable standards (Anandajayasekeram *et. al.,* 1996; Wessels, 1998). The expected effectiveness of proposed strategies could also be determined by an *ex ante* analysis.

A tool for effectiveness analysis is the 'Logical Framework Analysis' (LFA) approach (Van Rooyen *et. al.*, 2002). The LFA permits assessment of the degree to which the project has made changes in the desired direction. The framework itself is a four by four planning matrix summarising information required in the design or evaluation of a project. It provides a structure specifying components and linkages between a set of means (inputs and activities) and a set of ends (outputs). It renders assessment transparent by explicitly stating the underlying assumptions of the analysis. It states why a project was (or will be) carried out, what and how it was (or is to be) achieved, where the data required could be obtained, which external factors are (were) crucial and their cost. The LFA places a project in the framework of constraints, objectives and development context. The relationship between problems, objectives, etc., is presented systematically, requiring thorough, participative analysis. The LFA is a tool for planning, monitoring and evaluating projects based on logical deductions. It is also useful in linking projects (micro level) to the context of development programmes and national goals (macro level) (Van Rooyen *et. al.*, 2002).

LFA as a planning technique was developed by several institutions simultaneously over the past 30 years and is popular today with a range of international agencies such as the EU, the World Bank, the SADC and many donors. LFA aims at analysing, planning, implementing and evaluating development interventions to improve quality. It is a systematic approach, facilitating improved communication and information capturing. Its participative nature and the experience and skills of participants are both vital and beneficial in the application of LFA. It facilitates logical, structured and formulated thinking and standardised presentation. It can be used to foster commitment to structured, participatory and flexible projects and as tool for dialogue regarding development issues. However, LFA has limitations and is only a tool. It facilitates description of interventions in a logical manner to improve the manner in which ideas are formulated and its expression in a clear, standardised way, and has no application beyond that. Applied within bad policy or when using the wrong criteria, LFA will highlight incoherence and shortcomings but it will not result in better policy or produce different criteria. Both its quality and results depend on its users, on that of the surveys, on the accuracy of data and the commitment of those representing the groups concerned. The method is particularly useful to interventions such as technical and investment projects serving economic development and/or social ends (Van Rooyen *et. al.*, 2001).

For the *ex ante* effectiveness analysis, problem analysis through the 'problem tree' approach will be used (Anandajayasekeram *et. al.*, 1996; Wessels, 1998; Van Rooyen *et. al.*, 2001). This entails a participative, analytical process to identify problems and will form the basis for problem solving and project design. A participative, informal structure of discussion to share information, identify constraints and derive solutions will be followed. During the analytical phase participants define problems that are written out on charts and displayed. After checking for duplication and reformulating unclear cards, they are arranged in a cause-and-effect linkage, resulting in the 'problem tree'. Subsequently, by changing the negative states into positive states and by arranging these in groups reflecting the activities-ends linkages, the problem tree turns into an 'objective tree'. When participants accept these trees as correct and complete, the criteria will be used for 'strategy analysis' to select the objectives which will constitute the planned intervention. During strategy analysis, pooling of associated objectives takes place to identify strategies. The next step is the planning phase which aims at setting up a logical framework (logframe), in the form of a summary matrix:

| | Intervention logic | Objectively Verifiable Indicators (ovi) | Sources of verification | Assumptions |
|---|---|---|---|---|
| Goal/vision | Improved income | Measure of goal achievement | Sources of info<br>Methods | |
| Project Purpose | Improved? | End of project status | Sources of info<br>Methods | Assumptions affecting output-purpose linkage |
| Outputs/ Results | Reliable service | Magnitude of output<br>Planned completion date | Sources of info<br>Methods | Assumptions affecting input-output linkage |
| Inputs/ Activities | Build/supply/. | Nature & level of resources, starting date | Sources of info<br>Costs | Initial assumptions |

Column one represents the project's INTERVENTION LOGIC, derived from the objectives tree. Column two represents the OBJECTIVELY VERIFIABLE INDICATORS that describe the goal, purpose and

outputs in operational terms, i.e. quality, quantity, place and time. Column three represents the SOURCES OF VERIFICATION that indicate where and in what form information may be obtained to verify results. It also includes the COST of resources needed to carry out the activities. Column four represents ASSUMPTIONS or external factors over which the intervention has no direct control but which are crucial in achieving the results, purpose and goal. The intervention logic comprises all stages within the (project) intervention, which need to be completed in order to achieve the goal: outputs are achieved through the activities, the purpose is realised through the outputs, and the goal is reached via the purpose. The LFA facilitates transparency by stating assumptions, checking hypotheses and expected results; it deals with a number of social goals and does not reduce benefits into one figure. It is understandable to non-scientists – facilitating decision-making and allowing for flexibility (Van Rooyen *et. al.*, 2001).

### 4.3.3. Social impact

This impact describes the impact of a project on the people involved in terms of so called 'winners and losers' or diversity impacts as a result of the project. Since this study is focused primarily on the effects of the project on participating and non-participating farmers as well as project agents, the broad term, people level impact is also applicable. Having indicated that ignorance of social aspects has previously been the downfall of many projects, social impact determination is a priority. It deals with the influence of the project on participants in terms of quality of life: income distribution, job creation, security considerations, changes in knowledge or skills, nutrition, etc. Change in practice also constitutes a social impact. These impacts are often difficult to measure, but should be identified and if possible quantified. Social impact reflects the ultimate distribution of benefits and costs within society and its groupings. It includes changes in attitudes, resource use patterns and distribution, status, institutional implications etc. Socio-economic surveys are generally used to assess this impact but as it is often difficult to attach a weight to social considerations, a qualitative approach can also be followed (Van Rooyen, 1983; Anandajayasekeram *et. al.*, 1996). Both questionnaire data and a qualitative approach will be used in the case study. The design criteria that will be dealt with in this section are that technical aspects must be reconcilable with social realities, how co-ordination is structured, how diversity is quantified and human capital development recognised.

A description of diversity in an agricultural community together with recorded and expected social changes, provide a clear indication of intervention impact. Such trends will be used to describe the social impact of the project approach at Sheila. The use of a typology acknowledges and describes rural diversity, highlighting the constraints of each type or group. It effectively links development to social diversity and is a useful policy and development tool. It must be recognised, however, that a typology is a static representation with a shift between types within the typology possible (Laurent *et. al.*, 1999). A representative typology of farmers active in the area, to identify groups within the agricultural community, will form the basis of the social impact analysis. It will describe the diversity of farm units within the local environment. This typology will be based on the role of agriculture in the household. For types

determined within the typology, LFA will be conducted to analyse the situation of particular farmer types. Problems and strategies will be elaborated. This *ex ante* analysis, based on a problem solving approach, will be used to estimate the impacts of proposed recommendations.

### 4.3.4. Financial and economic impact analysis

A basic financial analysis is a description of financial flows through an evaluation of costs, subsequently resulting in (income) benefits. Particularly cost, yield and price data are evaluated. Budgets that describe costs (inputs, etc.) and benefits (yields, prices) will be compiled. This analysis will also access resource use, incentives, financial planning and management (Anandajayasekeram *et. al.,* 1996; Wessels, 1998). For the *ex ante* evaluation, expected financial values will be used.

Financial analysis as used in this study refers to a cash-flow analysis from which past and future expenditure and income are calculated to determine financial feasibility of the project. Analyses are done at market prices. This provides an indication of the pressure the project will place on the exchequer, i.e. the fiscal requirements and degree of subsidisation required. Financial analysis usually starts with representative farm models. Based on patterns of representative farms these models generate enterprise (crops and livestock) budgets to compare the situation "with-the-project" to that of "without-the-project". Current prices are used, depreciation and non-cash items are included, but off-farm income is excluded (Van Rooyen *et. al.*, 2001). Data will be collected from literature and through a questionnaire. Again, the principles or design criteria that will be guiding this analysis, deal with human capital development, participation and financial viability.

Since resources are always limited, an important consideration is to find optimal combinations through which net benefit can be optimised. This analysis determines the economic efficiency of resource use at a project, meaning that benefits and costs are evaluated at prices that reflect relative scarcity of inputs and outputs. These prices represent opportunity costs and reflect actual economic value. In perfect conditions, market prices are the best criterion upon which allocation of resources can be based. However, markets are seldom perfectly competitive and supply and demand does not always determine prices. Product market and services prices do not reflect actual economic value (scarcity value) when government interferes in markets through for instance tariff protection, taxes or subsidies.

When market operation is interfered with, for example by restriction or stimulation of supply or demand, or by price interference (through policy or market failure or both), market prices do not reflect economic scarcity values and the use of shadow prices becomes necessary (Van Rooyen *et. al.*, 2001). Economic analysis is therefore used to determine whether a project is likely to contribute to the broader economy and if this contribution is large enough to justify the use of scarce resources. It deals with situations where markets do not accurately indicate benefits and costs. According to Gittinger, 1982 and Van Rooyen, *et. al.* (2001), economic analysis differs from financial analysis in that:

Economic values/prices reflecting true social and economic values are used (shadow prices).
Tax is not subtracted from income, as it is not a cost item for the broader economy but a profit.
Subsidies are seen as a cost to the economy and i.e. sales tax is subtracted.
Interest on capital is seen as a profit for society and the economy and not a cost.
Household consumption is recognised in economic analysis.
For labour cost the lost value of the best alternative is used.
The value of production forfeited in the without project situation is included as opportunity cost

Economic impact can be traced through its effect on production and income. It compares the benefits to society from a project and the costs incurred; i.e. efficiency analysis, to be done *ex-ante* or *ex-post*. *Ex-ante* methods are useful as planning tools as they aid in selection and resource allocation. *Ex-post* studies are useful for justifying and demonstrating the payoff of investments. A simple technique such as a partial budget and cost benefit framework can be effectively used to estimate ROR of projects. In general it is accepted that all secondary effects would be captured through the application of economic shadow pricing of all direct project benefits and costs (Van Rooyen *et. al.*, 2001).

The cost-benefit approach (CBA) assesses whether stakeholders have (or had) sufficient incentive to invest in a project (Van Rooyen, 1986). CBA traces resource flows, identifies and values costs and benefits and compares these with a without project situation - the difference being incremental net benefit (Gittinger, 1982). Advantages of CBA include systematic evaluation, comparison of economic values and opportunity to consider managerial implications. Limitations are the large informational and time requirements, the many fixed assumptions and the possibility of manipulation. CBA can be misleading if vital costs or benefits are overlooked or wrongly estimated, or if dubious data are included. Difficulties centre on identifying relevant data and choosing value indicators. Externalities and environmental issues must also be recognised (Gittinger, 1982; Van Rooyen, 1996). CBA is an aid to decision-making about resource use and rates of return (Tisdell, 1985). All project effects cannot be quantified through CBA. It therefore forms part of a more comprehensive assessment. The design criteria to be recognised in economic analysis deal with the questions of the efficiency of linking social reality to technological change, the institutionalisation of linkages, participation and human capital development.

Step one is to identify the technical inputs and outputs for a proposed investment, step two to value inputs and outputs at market prices to construct financial accounts, and finally, step three to adjust financial prices so that they reflect economic values better. Relevant direct costs and benefits are valued at realistic, economic (shadow) prices. International prices for traded items and the 'willingness to pay' for non-traded items are normally used for valuation. Shadow prices should be determined through the application of economic principles so that different project evaluators achieve the same results. The valuation of factors such as water, land or labour rest on the principle of opportunity cost; i.e. the economic value of production lost should it be withdrawn from the most economic alternative and employed at the project. Where benefits accrue over time, a discount rate must be used for comparability.

To deal with inflation, its rate is subtracted from the selected interest rate to give the 'real' discount rate (Gittinger, 1982; Van Rooyen, 1986; Van Rooyen, *et. al.*, 2001).

Financial prices are adjusted to reflect economic value (opportunity cost) in three steps (Gittinger, 1982): adjustments for direct transfer payments entailing shifts in claims to goods/services from one entity to another. Four are common in projects: taxes, subsidies, loans and debt service. The second step entails adjustment for distortions in tradables: the opportunity cost of a least cost, sustainable alternative is the farm gate price, i.e. calculating export/import parity prices by respectively adjusting c.i.f. (cost, insurance and freight) or f.o.b. (free on board) prices by relevant charges between the farm gate and where the price is quoted provides export/ import parity value. The final step entails adjustments for non-traded items: for bulky goods or perishables the market price is used if it reflects its value - if not, the 'willingness to buy' concept is used. Non-tradables are products for which the import price is higher than the cost of local production, but this cost is also higher than the world market price. Goods can therefore not be traded at a profit.

Shadow prices should reflect the real economic value of resources for the region where they are purchased. It is therefore necessary to recognise political influences as they underlie the nature of community benefits. As example, the value of capital; market prices; job opportunities, wages, externalities (i.e. damage to the ecology); and income distribution is relevant. Political consideration therefore constitutes an integral part of decision-making and must be accounted for when assessing any project (Van Rooyen *et. al.*, 2001).

## 4.4 Indirect impact

The true value of a project should be measured in terms of its contribution to the local economy (Van Rooyen, 1983). Indirect effects include all impacts stemming from (forward) and induced by (backward) linkages with other sectors in the economy, e.g. increased activity in supplier and processor sectors. This includes employment creation, scale effects and other spillovers. It entails all costs and benefits related to collection, value adding, distribution and supply of direct products, including quantifiable and non-quantifiable (intangible) effects such as changes in quality of life and attitude. Theoretically, indirect effects related to income generation and employment outside the project do not need to be included in an assessment in a perfect market, as price mechanisms would enable calculation of all impacts as direct (Gittinger, 1982; Van Rooyen, 1986). In reality, however, the economy does not function in a perfect world. Due to distortions indirect effects must be accounted for.

### 4.4.1 Spillovers and linkage impacts

In a closer analysis, procedures and technologies used in the project approach usually have wide applicability. In most cases improved access to services does not impact on project participants only. If a technology or procedure makes economic sense, the project acts as demonstration. If the financial status of participants changes, they will invest in the community, through expenditure. Many project effects will thus impact on farmers and other inhabitants in neighbouring areas and even further afield. Agricultural activity often has many linkages and spillovers into other sectors and communities, as described in chapter two. Specifically in terms of agricultural projects, a large number of employment opportunities are usually created. These aspects will be evaluated at the Sheila case study.

Benefits and costs are often intangible, making them difficult to quantify and to allocate a money value to. Almost every agricultural project has intangible costs and benefits. These include benefits such as improved quality of life, less stress, improved confidence etc. It may also include creation of job opportunities, better health and reduced infant mortality as a result of more clinics, better nutrition, reduced disease etc. Such intangible benefits are real and reflect true values. They do not, however, lend themselves to easy valuation.

Because intangible benefits are a factor in project selection, it is important that they be carefully identified and, where at all possible, quantified (Gittinger, 1982; Van Rooyen *et. al.*, 2001). Relevant data was collected from the literature, the questionnaire and qualitative discussions. Design criteria to be dealt with in this section are linking social reality to technological innovation, human capital development and sustainability.

### 4.4.2 Environmental Impact Assessment

Agricultural technologies can have both positive and negative effects on the natural environment and an impact assessment should consider these externalities, preferably prior to decision-making. Environmental impact assessment is designed to identify and predict the impact of an action on the bio-geophysical environment and on man's well-being, and to interpret and communicate information about these impacts (Munn, 1979). This should be based on an understanding of physical and biological effects. Environmental impact assessment (EIA) should be an integral part of project planning and is becoming increasingly important due to concerns for ecologically sustainable development. Exclusion of EIA may affect the accuracy of estimates of a project's value. However, if such externalities were positive and substantial, the case for public funding would be stronger (Van Rooyen *et. al.*, 2001b).

In order to quantify and value the environmental impact of an agricultural initiative, it is important to understand the source, nature and relationships of an impact and variables that can affect current and potential producers and consumers. An environmental impact assessment should contain a description of the proposed actions, prediction of the nature and magnitude of environmental effects (both positive and negative), and an identification of human concerns. These predictions will often be uncertain, but the degree of uncertainty should be indicated in qualitative terms at least. The probably adverse consequences of any development must be weighed against estimated socio-economic benefits, and the areas of human concern for each proposed action (Van Rooyen *et. al.*, 2001b).

In the system used in this study, indicators are rated as being significant positive, insignificant, or significant negative. In the absence of data required for thorough analysis, it is still possible to identify the nature of the social costs and benefits, together with the gainers and losers. Environmental impacts should be assessed as the difference between the future state of the environment if the action took place and its state if no action occurred. The probably adverse consequences of any development must be weighed against estimated socio-economic benefits, and the areas of human concern identified for each proposed action (Van Rooyen, et. al., 2002). The prediction of negative environmental side effects does not necessarily mean that the new technology should not be used. The net benefit may be sufficiently large to provide compensation to those who are harmed and still leave a net surplus to the society. This is often a policy question that needs to be addressed.

Environmental impact analysis has a significant degree of inherent uncertainty due to the natural variability of the environment and inadequate understanding of the behaviour of this environment. For a proposed project, the environmental assessment should at least include a prediction of the nature and magnitude of effects (positive and negative); a listing of indicators whereby effects can be monitored and the human concerns involved. The level of detail depends on the sensitivity of the affected environment and the extent of the impact; the scale of the proposed technology; scientific expertise and time available (Van Rooyen, et. al., 2002).

## 4.5 Qualitative, systemic impact analysis framework

In chapter three a series of 'Decision rules' developed by the DBSA, with the aim of analysing development projects were discussed as part of an evaluation of critical aspects of the project approach. These 'Decision rules' are used to promote consistency and accuracy in determining efficiency, equity and sustainability in a user-friendly way. A comparison with the project design criteria developed in this study established a series of similarities. The original motive for the DBSA's decision rules was to introduce economic logic to project appraisal and allow for rational allocation of scarce resources. In the chapters of this study dealing with the case study, the decision rules will represent a qualitative framework of analysis, as a key part of the Impact Analysis. The series of sequential questions designed to raise critical issues in a logical manner will actually form the final part of the study's impact analysis, as it provides an overview of the intervention. This framework will be used to effectively summarise the comprehensive analysis. The key criteria will be used in support.

Table 4.5.1: A summation of the 'decision rules' developed to facilitate project analysis and the project design criteria, used as a qualitative framework for project analysis.

| DECISION RULES | DESIGN CRITERIA |
|---|---|
| All role-players' project objectives must be complementary | Technical innovations must be reconciled with social realities |
| A programme fit for all stakeholders required | Economic diversity must be dealt with through a typology |
| Project must fit the policies of all stakeholders | Co-ordination and linkages (integration) must be structured. |
| The intervention must address a government/market failure | Ongoing pParticipation and HCD must be facilitated |
| An appropriate financing agent must be identified | |
| Participants should eventually owns the project | |
| Gains from the project must be quantified | |
| The project must be financially affordable | |
| The project must be economically efficient | |
| Benefits must be sustainable | |
| The project must be established the best alternative | |

## 4.6 Data collection

### 4.6.1 Data collection procedures and verification

Gathering data in a diverse rural community, relatively soon after the political change in the early nineties, was complicated. A thorough process of information gathering was followed, as information gathered solely through a survey, without a relationship being forged between the parties first, could have led to misleading results. After all available secondary data was studied, interviews with key informants from the previous and current support services were held. Through their intervention, the analyst was introduced to the community and its extension officers. This led to a three-year qualitative investigation that included participatory analyses and demonstrations through a Farming Systems Research (FSR) - project. The FSR approach was used as it deals with farmers' constraints, while its participatory methods facilitate a systemic view (Norman, 1993). It focuses on the household and addresses socio-economical issues, providing a context for collaboration (D'Haese, 1997).

### 4.6.2 The participatory learning and action (PLA) phase

As an important part of this study entailed qualitative, participatory procedures to understand and analyse livelihoods at Sheila, the reasoning for using this methodology and the philosophy, on which participatory analysis is based, is described.

Development scientists often have a restricted vision of the realities of rural life as it entails a complex environment in which agricultural and other activities are linked. A paradigm shift in development during the past decade, forcing scientists to focus on the 'human factor', hinges primarily on enhanced participation (FAO, 1990). Understanding farmers is critical for effective development, forcing a focus on participatory evaluation. Farmers must become part of development, making communication crucial and circumventing the problem of farmers being passive collaborators or onlookers (Ashby & Quiros, 1991; Chambers, 1992; Pretty & Chambers, 1994; Chambers, 1994; Botha, 1996). A hypothesis is that if farmers can be enabled to analyse their own situation, they obtain knowledge and are more committed to action. Participatory methods are powerful, valid and reliable when well facilitated and performed (Chambers, 1991; Schönhuth & Kievelitz, 1994). PLA forms part of a more balanced approach. In contrast with traditional methods, participants dominate proceedings in PLA; while the researcher facilitates, establishing rapport, enquires and facilitates using the methods (Chambers, 1991; Schönhuth & Kievelitz, 1994).

PLA is accepted as valid research methodology and is especially suited for gathering social and socio-economic information. However, the user requires a level of expertise or inclination towards social processes and mediation (Kumer, 1993; Van Vlaenderen, 1996) as the 'recipient mentality' cultivated over decades is difficult to overcome (Botha & Treurnicht, 1997). PLA focuses on behaviour and attitude,

which eventually determines action (Chambers, 1992; Chambers, 1993b; Chambers, 1994; Pretty, 1994). Regarding validity (closeness to reality) and reliability (consistency of findings), PLA has an impressive empirical record (Gill, 1991; Chambers, 1994). Reliable information can be obtained if certain criteria are considered, including persistent observation as well as peer and participant checking (Pretty, 1994; Botha & Treurnicht, 1997).

### 4.6.3 The questionnaire

Although questionnaires are accepted as an analytical tool in agricultural development, without sound preparation its use can lead to misunderstanding (Horton, not dated). To obtain the trust of the respondents is vital in ensuring that the data can be used with confidence. If questionnaires are needed, these should be short, conducted later in the process, and focused on a particular issue (Mascarenhas, 1991; Botha & Treurnicht, 1997). In this study, potential respondents were part of the investigation through the participatory PLA phase before the quantitative survey. The use of a qualitative approach (PLA) is valuable in describing the population and indicating the required sample size, as described by the FAO (1992). Data could be checked with the secondary data (literature), the PLA survey and direct observation over the period of investigation.

Specific and concrete questions could subsequently be used to validate data gathered. A survey could quantify farming systems and the problems experienced by farmers. As part of the data required for the comprehensive social, institutional, financial and economic analysis used a description of households, resources, household income, agricultural income, capital resources and institutional arrangements will receive attention. Open-ended questions are to be used to obtain numeric data regarding hectares planted, number of income sources, etc. Close-ended questions (i.e., multiple choice) and dichotomous questions with two alternatives (yes or no) are also to be used. The questionnaire focuses on specific aspects and takes roughly 45 minutes to complete. It was pre-tested and revised before implementation.

Data obtained with this questionnaire will be statistically analysed to obtain a description of the community involved, to isolate variables that determine diversity within the population and to quantify this diversity. Statistical analysis entails a quantitative description of a particular environment: an exact analysis of a sample to facilitate extrapolation to a wider situation (Van Ark, 1995). Statistical analysis is particularly necessary where considerable variation occurs, to determine how significant the results are. Variability introduces a degree of uncertainty into a conclusion drawn from those results. The investigator needs to be convinced that a repetition of the study would provide the same results (Cochran & Cox, 1957; Federer, 1955). Statistical techniques enable the researcher to infer his findings to the bigger picture; i.e. the region or province. As Van Ark put it: "In statistical inference, we are concerned with how to draw conclusions about a large number of events, on the basis of observations of a portion of them."

## 4.7 Methodology framework

In summary, table 4.7.1 describes the different impacts that will be determined, as well as the way in which this will be achieved. The design criteria are incorporated into the impact assessment methodology. A systemic procedure is used, since various factors needed to be recognised.

Table 4.7.1: A summarised description of the comprehensive impact assessment of the Sheila project (1976 to 2005), including techniques, procedures and design criteria used.

| | Impact type | Objectives | Methodology | Info Source | Design criteria |
|---|---|---|---|---|---|
| 1 | Effectiveness analysis | Compare project goals & results for different farmer types | LFA | PLA, Lit, Experts | Technical vs. Social?<br>Diversity dealt with?<br>Co-ordination & linkages?<br>Participation & HCD? |
| 2: | Financial analysis | Compare B & C of farmer types | Farm budgets, CBA, IRR | Lit, Survey, Experts | Co-ordination & linkages?<br>Participation & HCD?<br>Diversity dealt with? |
| 3 | Economic analysis | Compare 'real' project C & B of farmer types | Economic CBA, IRR estimates | Lit, Survey, Experts | Co-ordination & linkages?<br>Participation & HCD? |
| 4 | Social analysis | Changes in practice, skills, etc. of farmer types | Typology | Lit, PLA & Survey | Technical vs. Social?<br>Diversity dealt with?<br>Co-ordination & linkages?<br>Participation & HCD? |
| 5 | Institutional analysis | Organisational changes – addressing farmer types | Trend analysis | Records, PLA, Experts & survey | Diversity dealt with?<br>Co-ordination & linkages?<br>Participation & HCD? |
| 6 | Indirect effect analysis | Linkages & spillovers changes | Interviews, trend analysis | Lit, PLA, Experts & Survey | Technical vs. Social?<br>Co-ordination & linkages?<br>Participation & HCD? |
| 7 | Systemic IA | Sequential, summarising key impact questions | DBSA framework | All the above | Technical vs. Social?<br>Diversity dealt with?<br>Co-ordination & linkages?<br>Participation & HCD? |

Note: LFA = Logical Framework analysis
PLA = Participatory Learning and action
Lit = Literature
CBA = Cost-Benefit Analysis
IRR = Internal Rate of Return

# CHAPTER FIVE: CONTEXTUALISING AGRICULTURAL DEVELOPMENT PLANNING IN THE NORTH WEST PROVINCE OF SOUTH AFRICA

## 5.1 Introduction:

In this section, the focus shifts to the rural community of the North West province, the eventual beneficiaries of this study. Before the actual impact assessment, a broad historical perspective is established, to illustrate the evolving livelihoods of the farming community of the province. The role of agriculture in the historical Tswana communities and its development through the past century is described. Specific attention is given to the involvement of support services and strategies, as the aim is to improve these. A physical description and a socio-economic profile of the province and its people are also provided. The current agricultural scenario completes this chapter.

## 5.2 Physical and biological description of the Province:

During 1994 Bophuthatswana was incorporated into the RSA. Although a small part of Bophuthatswana now forms part of the Free State, most of the erstwhile state, together with the erstwhile Western Transvaal, became the North West Province, situated in the north-western corner of South Africa, where it borders Botswana. It also borders the Limpopo province to the north, Gauteng to the east, the Free State to the east and south and the Northern Cape to the south. It is situated between 24 38' 10" S and 26 27' 17 S latitude and 22 37' 44" E and 28 57'20" E longitude. Spatially it is a medium-sized province, covering 118 710 $km^2$ (11.8 million hectares), or 9.7% of the total surface area of the RSA.

Although roughly 3.6 million people reside in the province (on par with the Western Cape), it has a relatively small population, with less than 9% of the country's total. The high population growth rate of 3.2% is slowing, due to higher child survival rates, increased female participation in labour and particularly the Aids pandemic. It has however, the second highest growth rate of the country. Urbanisation is high in the Klerksdorp, Potchefstroom and Mafikeng areas with roughly 48% of the population being urban. The province is relatively uniform in terrain, as the topography is mostly flat in the western and central parts, and rolling in the east, with altitudes ranging between 800 and 1100 metres (Anon., 1997; DBSA, 1999).

The climate is typical of a dry steppe with warm to hot summers and cool, sunny winters. Average mid-summer maximum temperatures vary from the high twenties to low thirties (degrees Celsius) while the minimum at this time of year usually varies in the high teens. During winter the minimum temperatures usually range around zero C with frost, rising to around 20 C. Temperatures can be extreme with minus 8 C and plus 40 C being encountered on occasion. The province is semi-arid with declining rainfall from

east to west. Winds are predominantly from the North West. Wind erosion is a significant environmental issue, as wind often damages young plants through 'sand blasting' (Stilwell, 1985). Rainfall occurs primarily during summer (October to April) and ranges from 400mm p.a. in the far west to 700 mm in the far east (Stacey; 1992; Worth, 1994; Anon., 1998b). Three rainfall bands can be distinguished: 700 to 600mm/a in the east, between 600 and 500mm/a in the central parts and 500-400mm/a in the west. Serious droughts occur every 9-10 years on average. Seasonal droughts are a regular occurrence in cropping areas. Areas suitable for irrigation are limited to the Vaal River, the Taung Scheme, and the Hartebeespoort, Krokodilpoort and Vaalkop dams. The total area under irrigation is roughly 116 000 ha (Anon., 1998b). Substantial groundwater is found in the dolomite belt that runs east- west through the central parts (DBSA, 1999).

Large parts of the province are ploughed, although more than 80% of the province is primarily suitable for extensive grazing (Stacey, 1992; DBSA, 1999). Arable land with an effective depth in excess of 450 mm covers roughly 1.2 million ha, or 10.3% of the province. The majority of soils have a low clay percentage and are subject to wind erosion. The main crop, maize, is predominantly grown on deep soils. Sunflower is favoured where the clay percentage is higher. About a third of the country's maize is produced in the province (Anon., 1998a). The main cropping area is in the central parts. In the east sunflower dominates, where soils allow. Other crops include sorghum, wheat, cotton and dry beans (Anon., 1998b). Kalahari Thornveld and shrub Bushveld cover approximately half of the province (in the west). The eastern parts are a blend of mixed sour Bushveld, Bankenveld and Cymbopogon/Themeda veld with the last-mentioned dominating the southern region. The potential grazing capacity varies between 4 and 18ha/ large stock unit, but often the actual grazing capacity is lower due to overgrazing (Anon., 1998b).

Although no official demarcation into agro-ecological zones is available for the province, three obvious zones that closely mirror the three administrative regions can be distinguished (see figure 5.2.1). More than a third of the province lies in the drier western area where Kalahari Thornveld with red, sandy pedal soils dominating. Rainfall is generally below 500 mm p.a. and the area is almost exclusively suitable for grazing, although isolated crop production does take place; viz. groundnut production in parts of the Vryburg region. Districts included are Vryburg, Ganeysa, Kudumane and Taung. The central region predominantly has plinthic catena soils, mostly deep, red and suitable for crops and pastures. Districts included are Molopo, Madikwe, Ditsobotla, Marico, Lichtenburg, Lehurutshe, Delareyville, Schweizer-Reneke, Christiana, Bloemhof, Wolmaransstad, Klerksdorp, Potchefstroom, Ventersdorp and Coligny. In general this area receives between 500 and 600 mm of rain annually. Some districts can be described as marginal for crop production, but mixed farming is practiced in all districts. The Eastern region is undulating with a larger variety of soil types. In many cases soil conditions inhibit cropping potential. Rainfall is generally above 600mm p.a. and the area includes the Swartruggens, Koster, Rustenburg, Bafokeng, Odi, Mankwe, Marico, Moretele and Brits districts. A variety of agricultural enterprises take place, depending on soil type, but clay soils dominate. Defining regions only climatically is however increasingly recognised as being simplistic and not particularly precise (Tapson, 1996) and a scientific elaboration is needed.

Figure5.2.1:


Predominant Agricultural activities
(Municipal boundaries per district in the NWP)
300 mm
400 mm
500 mm
600 mm
700 mm
Molopo
Kagisano
Naledi
Mosohaweng Municipality
Setla-Kgobi
Mafikeng Local
Zeerust Local
Moses Kotane Municipality
Moretele Local
Local Municipality of Madibeng
Rustenburg
Kgetleng River Municipality
Ditsobotla
Ventersdorp )
Tswaing Municipality
Potchefstroom
Klerksdorp
Maquassi Hills
Schweizer-Reneke
Greater Taung
Lekwa-Teemane Municipality
N
S
E
W
Key
Rainfall Zone
Municipality boundary ship
Irrigation
Livestock and cropping
Extensive livestock
North West Province
Private Bag X804
Potchefstroom
Tel No
Ref no.
Predominant
Approved

## 5.3 A historical perspective (until 1994)

### 5.3.1 Social, cultural and political dimensions.

The Batswana (Tswanas) were part of a larger Sotho grouping that migrated from the great lakes in central Africa from 1400 to 1600 AD and at the turn of the century occupied what is today Botswana and western parts of South Africa (Stacey, 1992). The first contact between the Batswana and Europeans came from missionaries in 1801 and by 1850 frequent interaction took place (Worth, 1994). Prior to 1840 the Batswana settled in large communities housing 5000 to 10 000 people, involved in subsistence farming and hunting (Stacey, 1992; Worth, 1994; Karodia, 1994). Settlement patterns were fluid with internal strife and external threat often leading to migration. Agriculture has for many generations, been a part of Batswana society and influenced by cultural and traditional values. A definite class differentiation historically existed within Tswana communities (Bundy, 1979), and is still evident today.

Through a series of British enactments, the land of the Batswana was colonised as British Bechuanaland, was later given to the Cape Colony and eventually became part of the Republic of SA. During the early part of the last century reserves for the Batswana were established in these parts. The boundaries were entrenched by the 1913 Natives Land Act. Various laws removed independence, and the right of real government over own affairs (Molatlhwa, 1976). The socio-political history of the country and especially the crippling effect the apartheid system had on African communities and small-scale agriculture, was described in chapter two: as part of the Apartheid system, independent states were created for the black population throughout the country. In Bophuthatswana this process involved tribal authorities in a process of constitutional development that led to the Tswana Legislative Counsel in 1971, self-governing status in 1972 and independence in 1977, with the creation of the Republic of Bophuthatswana. The President and his cabinet held executive power. The parliament was known as the National Assembly and was elected on a constituency basis. Bophuthatswana covered just over 44 000 square kilometres, sharing a common border of almost 3000 kilometres with SA and one of 260 kilometres with Botswana. Its independence was generally not recognised internationally and was based on a patriarchal approach with heavy reliance on SA for fiscal aid and employment (Karodia, 1994).

The political situation changed dramatically during the early nineties. This was initiated with the coming to power of the then state president, F.W. de Klerk in SA. As part of extensive democratisation processes political prisoners were freed (amongst them Nelson Mandela), organisations such as the ANC were disbanned and many processes to reverse discriminatory legislation took place. Bophuthatswana was incorporated into SA in a revolutionary manner during March and April 1994: demands that it should, as the other previously independent states, be incorporated in SA and that its citizens take part in the first general elections planned for April that year were rejected by the local government. This led to civil service strikes and clashes with police. Marches and petitions took place daily and the tense situation escalated when a right wing organisation (AWB) invaded the capital on the 11th of March 1994. The government of Bophuthatswana requested them to leave, which they eventually did, after some loss of life. A South

African delegation met President Mangope and demanded that he step down, which he refused. He was subsequently removed from power by decree (Karodia, 1994). After the elections the North West province was proclaimed comprising large parts of Bophuthatswana and Western Transvaal. A provincial government was established.

### 5.3.2 Agriculture's historic position

Until the later half of the 20th century, men did not work the land. Cropping was the domain of women, who cultivated maize, cowpeas, sorghum, melons, pumpkins, sweet reed (sweet sorghum) and beans. Men worked with the large animals and hunted. The arrival of missionaries led to men being taught methods of farming. Cattle featured prominently in the culture and the economy. They were kept at a cattle post and primarily used for milk and slaughtered for special occasions. Hired help or young sons of the family would tend the animals. Many of the traditional taboos surrounding cattle, (especially concerning women not being involved, lobola, etc.) have changed during recent times. A shift towards commercial utilisation of livestock (primarily as source of cash-saving) has been adopted, while certain traditional uses, such as slaughter for funerals or weddings, continue (Karodia, 1994; Worth, 1994).

Land was held communally and land rights were socio-politically determined with membership of a kinship group or tribe, qualifying these rights. The chief allocated arable and residential rights, the most individual rights, to specific households (Stacey *et. al.*, 1994). Land acquisition was seen as the right of every married male. Land rarely has economic value and was not owned, but the user was given permission to utilise it (Molatlhwa, 1976). The formal establishment of Bophuthatswana did not have a major influence on tenurial patterns and communal arrangements persist in many areas. The introduction of commercial development projects and more significantly, leasing of land mitigated this. Sharecropping became an important means of utilising land and resulted in small-scale household production to often give way to some form of commercial agriculture, with some control over land and capital (Stacey *et. al.*, 1994). According to Agricor's 1988/89 annual report, tribal land comprised roughly 11.2% of total agricultural land in Bophuthatswana. Government owned almost 770 000 ha or roughly 19.2 % of land. Trust land comprised roughly 2.5 million hectares (63%) of all land, and private land 273 000 hectares (6.8%).

The position of agriculture changed significantly as the mining industry developed. Large numbers of particularly Tswana men migrated to the mines for labour contracts, or to white owned farms. This was caused to some extent by the homeland's limited land availability and the semi-arid environment. New boundaries resulting from the various acts promulgated as part of the political 'Apartheid' system also prevented traditional migration in search of grazing and agricultural opportunities. The availability of cash wages, creating opportunities to establish independent households also played a role in changing the role of agriculture to a more supplementary position. The different types of tax (hut tax, road tax, dog tax) also contributed to migration to obtain income (Stacey *et. al.*, 1994). However, better farmers were still able to sell produce to white traders, as the growing population created an increase in the demand for food, fuel and labour (Bundy, 1979).

Although overgrazing, droughts and diseases affected all farmers, protective measures introduced after 1913 were allocated almost exclusively to white farmers. The extension of infrastructure to African areas was also neglected. The Land Bank and most co-operatives did not provide credit for black farmers who were further undermined by the Land Acts of 1913 and 1936. The Land Act prohibited land purchasing and had an impact on the types of tenurial relations that could be practised. Poor levels of support as well as the fact that homelands in effect became labour reserves mitigated the situation (Stacey *et. al.*, 1994). Huge areas of grazing were no longer accessible, placing severe limitations on cattle holding. The Native Trust and Development Act of 1936 caused further extensive migration into the reserves and viable enterprises became more difficult. For farming households to be economically successful sharecropping and labour tenancy became a means. New tenancy arrangements were developed and wage labour increased (Stacey *et. al.*, 1994).

Technological transformation also impacted on agriculture's position. The single-shear plough used from the early 1900s was by 1919 replaced by a double-shear plough. By the 1940s, some farmers used tractors and fertiliser. Entrepreneurial behaviour developed as tractor owners hired out services to other farmers (Worth, 1994). Since the 1940s population pressure became more pronounced as the population growth rate increased and control over human movement was tightened. During the 1960s many people were resettled in the homelands with the result that the existing reciprocity and sense of community was undermined. Large numbers of new households, often with very limited agricultural resources and thus no basis for reciprocity, developed, causing much fewer cohesive communities than traditionally existed (Stacey *et. al.*, 1994; Worth, 1994).

During the past 30 years employment of permanent and especially seasonal labour by homeland farmers increased markedly. Most small-scale farmers today employ wage labour, particularly in more intensive cropping areas. A transition from family to wage labour is evident. The trend is that men do permanent work, while women comprise up to two thirds of the seasonal work force. Cash or serve-in-kind remuneration is paid (Stacey *et. al.*, 1994). Extensive sharecropping developed - in some cases at a subsistence level but in others at a commercial level. Sharecropping entails tenancy where land is leased and rent paid to the tenant, normally as a proportion of output. This practice became common under a variety of contractual forms: It varies from a tenant with access to capital that rents land from any number of land right holders, to many poor tenants renting services from a wealthy landowner. A relationship evolves between those with access to capital and those with access to land (Stacey *et. al.*, 1994). This practice, as used in Ditsobotla is elaborated upon in the next chapter.

### 5.3.3 Agricultural support in Bophuthatswana

Support for black farmers in the area, although limited, was initiated during 1929 with the Native Agricultural and Lands Branch of the Department of Native Affairs, which had a limited budget and responsibilities and thus a limited impact. A greater focus on agricultural viability took place as a result of the Tomlinson Commission of 1955, whose aim it was "to help the Bantu to develop an efficient and self-supporting peasant farmer class in their own areas". This was based upon the transfer of modern

technology and resources, access to land and commercial marketing. Due to a lack of political will, most of the Commission's most important recommendations were never implemented, although their value is recognised today. These entailed establishing "middle class", viable farmers through comprehensive farmer support facilitating access to increased land, markets, credit and extension (Van Rooyen, 2000) as described in chapter two. Forced relocation and tightening of influx control led to dramatic increases in land pressure in the 1960s and 1970s, contributing to the lack of implementation of the Tomlinson Commission's recommendations (Stacey *et. al.*, 1994).

During 1976, the Department of Agriculture of Bophuthatswana, as the main thrust of its development activities, began establishing projects aimed primarily at food production. Projects entailed groups of farmers, linked to a co-operative. Emphasis was placed on commercial production with mechanisation and modern cultivation practices. Farmers received support with finance, training, technical aspects and management. Participating farmers had access to production inputs and markets (Bembridge *et. al*, 1982). Elements of the Tomlinson Commission's recommendations can be seen in this approach. The Taung Irrigation Scheme and the Sheila Dryland Cropping Scheme were the first of these projects initiated. Production for the market was propagated on these 'estates' with development according to sophisticated technical programmes, under expatriate management (Stacey *et. al.*, 1994; Worth, 1994).

The Department of Agriculture in Bophuthatswana, responsible for agricultural support, was augmented by six parastatals of which the Agricultural Development Corporation of Bophuthatswana (Agricor) was the largest in terms of budget and activity (Karodia, 1994; Worth, 1994). Established in 1978 it was to facilitate agricultural development and bring the state to self-sufficiency. It fell under the jurisdiction of the Ministry of Economic Affairs, but interestingly, had direct access to the President. Services included assistance to co-operatives, marketing and loan provision. The corporation was divided into three divisions, production, marketing and administration (Bembridge, *et. al.,* 1982; Worth, 1994). Agricor was established with two main goals; food production and human development. In theory the approach was in two phases; rapid establishment of viable production units, to be followed by community development. Development was measured in terms of technological advancement and production: the number of tractors in operation, hybrid seed and fertiliser bought and production achieved. Agricor merged an existing co-operative movement with large-scale, capital-intensive project development (Worth, 1994).

The mainstay of agricultural development therefore was the projects, of which Agricor inherited several already in operation. As described in chapter two, these projects were based on a technocratic approach with the main focus on maximum production on centrally managed, capital intensive, 'disciplined' farmer settlements. Agricor mainly provided services regarding infrastructure and credit (Beuster, 1980; Karodia, 1994; Worth, 1994). Modern cultivation and plant protection methods were applied, but generally not adopted to the degree that farmers were enabled to use them independently (Worth, 1994). If this approach is evaluated using the design criteria identified in this study, deficiencies in participation, co-ordination and social sustainability are obvious. Projects expanded until 1984 when 2500 farmers were supported in cultivating 50 000 hectares (Annual Agricor reports).

This marked an orientation towards classes of commercial farmers and wage labourers and led to increased sharecropping (Stacey *et. al.*, 1994).

In 1981 the Agricultural Bank of Bophuthatswana was established. By 1985, 95% of farmers utilised a credit facility, with two thirds of this credit originating from Agribank and another 20% from primary co-operatives. Eighty percent of farmers had no real understanding of their credit status at any given time. Between 1981 and 1990, Agribank advanced R322 million to farmers and wrote off in excess of R3.2 million in debts. Due to the drought from 1985 to 1988, Agricor rescheduled an additional R64 million for repayment over 20 years at no interest. Of the credit advanced between 1981 and 1990, R195.8 million (60.8 per cent) was recovered from farmers, R64.7 million (20.1 per cent) was written off and R61.5 million (19.1 per cent) remained outstanding (Agribank, 1981-1990). Agricor management of the projects entailed two accounts: an operational account for the expenses of Agricor at the projects and a development account, which was for the incurred cost for infrastructure and other fixed assets. All personnel and employees were paid from the operational account. Agricor owed loans to the government. It was carried over at 5% interest p.a. No other movement took place in the accounts during the 1980s. Debt write-offs were apparently done with ease, as in 1992 when in total R36 million was written off.

Agricor re-oriented its development approach during 1988 through "Temisano", based on integrated rural development. This was to address community development and recognise human development. It incorporated four facets, viz. production; community development; training; and secondary industries, which became agro-business (Worth, 1994). The typical modus operandi was to identify an area, do an economic feasibility study, negotiate the broad concept with the potential participants, secure finance, establish a cooperative and provide management. If the design criteria developed in this study are considered, certain flaws are clear. Especially commonality of objectives, social sustainability, equity, cost saving and reconciling technology with social realities was largely ignored. However, the main problem experienced was limited participation (Agricor Annual Reports).

By 1989, according to the chairman's annual report, Agricor was no longer a purely agricultural organisation, but one with a holistic approach to rural development. The organisation's budget for salaries was R18.8 million for 1989, with 11 district offices and 43 service centres staffed. By 1990 the 'new' dispensation, introduced in 1988 and involving an enlarged brief, allowed a development budget of R23.4 million and an operational budget of R56.6 million. A total of 78 service centres were in operation to facilitate the work of community development and extension staff. According to the annual reports, Agricor was now optimally staffed. There is little evidence of research in technology appropriate to small-scale farmers, while much evidence indicates the preference for a "high-tech" approach to farming (Bembridge *et. al.*, 1982; Bembridge, 1988). According to Promitz (1992), Agricor have had a "travel and visit" approach mixed with a programme approach. Looking at the expenditure patterns, it is evident that one of the implied aims of agricultural development was the establishment of a middle-class group of commercial farmers. Subsistence farming was given little support with no record of funds being expended on this sector prior to 1988. However, agriculture was considered the foundation of the economy and the basis for rural development (Bembridge, 1986c; Worth, 1994).

A 1988 report by the Department of Agriculture stated that the standard and quality of agricultural extension was unsatisfactory: supervisors had insufficient control over field staff and no systematic planning occurred. Deficiencies in quality of staff, technical support, communication, administration and management were experienced (Bembridge, 1988). During the early nineties, it was established that approximately 90% of extensionists in Agricor's service, had no formal extension training (Karodia, 1994). The majority completed a basic agricultural diploma at the Taung college of Agriculture. It was partially due to this assessment that the reorganisation of the agricultural services was carried out (Worth, 1994). Agricor underwent many changes in approach since its inception in 1978 (Karodia, 1994; Worth, 1994; Agricor reports, '87-90), as the shift to 'Temisano' illustrates. In time a significant percentage of staff became disillusioned with the continuously changing approach and became de-motivated (Karodia, 1994).

In a study done in several districts, farmers were found to be frustrated with agricultural programmes with no apparent impact (Worth, 1994). Project farmers in the Sheila ward indicated that in most cases, the Agricor-managed co-operative farmed for them. Frequently they were not consulted on purchases, budgets or the status of their accounts (personal communications: J Mashau; F Thlomelang, 1997). Decisions were often imposed on participants (Worth, 1994). Authors such as Karodia (1994) and Worth (1994) were often critical of development initiatives. They maintained that inappropriate and constantly shifting objectives and strategies; planning for, and not with farmers as well as the lack of effective monitoring hampered efforts. This is in clear contradiction with the design criteria developed in this study that emphasise co-ordination, complementary objectives and participation. When measuring development, the success indicators used varied. Politicians and technocrats aimed for tangible results such as tons per hectare, gross margins and debt repayment, while farmers were interested in food and income (Worth, 1994). Development seemed to constitute *ad hoc* responding to short-term political need while no broad system for monitoring was evident. Lack of management control was cited as a major contributor to the failure of the extension service (Worth, 1994; Anon., 1995). When Agricor was dismantled after the 1994 elections, it was headed for a crisis. Among the signs were expansion of the organisation and expenses and decreased productivity (Allen, 1985; Karodia, 1994, Worth, 1994).

Although agricultural development philosophy and strategies in the support services of the erstwhile Bophuthatswana were generally constructive, political pressure shifted the intended holistic focus towards production, with limited attention to human capital development. No coherent agricultural policy was ever formulated for the former Bophuthatswana (Karodia, 1994; Worth, 1994; Low, 1995). The Bophuthatswana and South African governments were interested in making independence from the SA economy tangible. The rationale was to be able to claim that the 'nation' was self-sufficient in food production. Development was equated with large-scale mechanised farming (Francis, 1998), leading to a technocratic approach aimed at maximum production. Sound development principles gave way to a paternalistic approach. Pressure was created with target yields, leading to high input costs. By 1985, maize produced at the projects was 'exported' to SA, in keeping with the political agenda of portraying a successful, independent country. However, during the early 1990s it was established that agriculture in Bophuthatswana consisted mainly of non-market production (Worth, 1994). The involvement of South African institutions at the projects, indicates that empowerment of

project participants was limited. To an extent Bophuthatswana remained dependent on SA, as economically, viability and independence was not achieved (Francis, 1999).

### 5.3.4 Bophuthatswana's agricultural potential

The agricultural potential of Bophuthatswana was the subject of numerous studies (Worth, 1994). It was found that even if agriculture was fully developed, rural unemployment would still occur (Beuster, 1981), signifying the need for non-agricultural options. During 1983 it was established that if all arable land in Bophuthatswana was utilised effectively, production could substantially improve (Roodt, 1983). Ten years later agriculture still operated largely in the non-market sector, where most of the production was utilised by the farmer and his family (Worth, 1994). Roughly 40% of the population owned less than 10 head of livestock and regularly planted a crop. Only 30% owned more than 10 head of cattle and planted regularly (Bosman *et. al.*, 1991). The farming community was roughly divided into a resource poor, landless and unskilled majority and an established, empowered minority, with an emerging sector developing between these extremes (Anon., 1997). Empirical data on farming activity was scarce, but expert opinion concluded that 15 to 20 % of the population derived some form of cash income from agriculture (personal communication, Mr. J Baird: Agricor. 1995). Roughly 60% of the rural population used land for agriculture and most ruralites with access to land, planted some maize (Worth, 1994). According to the Urban Foundation (1988), most families received remittances from migrants resident in urban centres. Between 60 and 80 % of the population's gross income came from remittances. Roughly 66% of rural dwellers used land for a portion of their subsistence needs. The subsistence sector was only 28% self-sufficient and other sources of income (remittances, pensions) were used for food purchases (Anon., 1998a).

Table 5.3.1: Crop area cultivated during 1988/89 for Bophuthatswana (Annual report, Agricor):

| | Total ha | Maize | Wheat | Sorghum | S'flower | G'nuts | Cotton | Dry bean |
|---|---|---|---|---|---|---|---|---|
| Bop '88/'89 | 65144 | 49396 | 465 | 1475 | 10840 | 1105 | 547 | 1316 |

Crop production was a key part of the Bophuthatswana economy (Table 5.3.1). On average, during 1983 to 1993, field crops contributed 49% to the country's gross agricultural income (Anon., 1998a). Crops produced under irrigation include potatoes, wheat, tobacco, vegetables and cut flowers. Yields varied according to soil type and rainfall and cultivation took place in areas considered marginal for production.

## 5.4 Socio-economic profile

Socio-economic reconstruction and development is a major challenge in the province today, but various inhibiting factors inhibit progress. The DBSA reports that the average population density during 1996 was 30.7 persons per square kilometre, varying from 194 people/km$^2$ in the urban east to 5 persons/ km$^2$ in the sparsely populated west. North West has a relatively small population in comparison with most other provinces as revealed by 1996 census figures. Of the 3.6 million people, around 1.7 million are female and 1.6 million are male.

Table 5.4.1: Number of people in the North West province in 1996, in relation to SA (DBSA, 1999)

| | *Total* ('000) | | | *Males* ('000) | | | *Females* ('000) | | | *Location* ('000) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0-14 | 15-64 | 65+ | 0-14 | 15-64 | 65+ | 0-14 | 15-64 | 65+ | Urban | Rural |
| *N-West* | **1231** | **1807** | **1397** | **611** | **914** | **607** | **620** | **893** | **790** | **916** | **2262** |
| *SA* | **14070** | **22161** | **1706** | **7063** | **10760** | **697** | **7007** | **1400** | **1008** | **18511** | **19427** |

The province has a young population with 40.4% of the population younger than 15 years of age and another 26% between 15 and 29. The results of the latest census represent the population as on 10 October 1996. Women usually outnumber men in predominantly rural areas with poor economic prospects. This can especially be seen in the very young (0-14) and very old (65+) age groups, in the province. Men outnumber women where employment in mining, agriculture or industry exists.

Roughly half (49.8%) of the province's population is functionally urbanised, including people in semi-urban areas. More than 91% of the population is African, while the Asian population constitutes 0.3%, Coloureds 1.4% and Whites 6.6% of the total. Roughly 80% of the population speak Tswana as home language, with Afrikaans at 9%. Approximately 4.3% of the province's people have tertiary qualifications, around 13% have completed high school and 31% have had some secondary education, while roughly 8% have completed a primary education. Among people aged 20 years and above, almost 22% have had no schooling at all. Water is available to 20.3% of the population in the form of water piped to their dwelling. Another 7.7% have water on site while the most-used source of water supply is the communal tap, which is used by 36.4%, while 35.6% of the population has to find water in other ways, such as springs, rivers or wells. People in the province rely heavily on public telephones. Almost 42% use a public telephone and only 17% have telephones in their dwellings or cellular phones.

The human development index (HDI) suggested by the United Nations uses people's life expectancy, school enrolment, adult literacy etc., as indication of capacities, while income indicators are used to indicate opportunity. The rationale for using such indicators is that freedom to choose and ability to act on choices measure the level of human development. The HDI for SA was calculated at 0.68 out of a possible 1, with that of North West on 0.54, on par with Zimbabwe. This is mirrored in the per capita income level of roughly R5000 for 1994, the 3$^{rd}$ lowest of all provinces and lower than the country's average of R8418. Translated this entails that 30% of households in the province can be described as poor. Social pensions amounting to R800 million were being paid per month during 1995 (DBSA, 1999).

Table 5.4.2: Social and Physical Indicators of the North West province (DBSA, 1999)

| Indicators | North West | South Africa |
|---|---|---|
| Area ($km^2$) | 118 710 | 1 223 814 |
| Population '93 (000) | 3.65 million (3.2% p.a.) | 40 million (2.7% p.a.) |
| Density (person/$km^2$) | 30.7 | 35.3 |
| Functional urbanisation (%) | 49.8 | 57.9 |
| Literacy rate, 1991 (%) | 70.1 | 82.8 |
| Labour force '95 (000) | 1.15 million | 14.36 million |
| Unemployment rate | 32.8 | 29.3 |
| Personal Income/capita (R) | 5000 | 8418 |
| Real GDP per capita (R) | 3911 | 5745 |
| Dependency ratio (no of people) | 2.1 | 2.0 |
| Life expectancy | 59.9 | 63.2 |
| Human development index | 0.54 | 0.71 |
| Hospital beds/1000 people, '92 | 3.91 | 3.93 |
| Pupil-teacher ratio, 1993 | 24 | 32 |

Human development levels in the province show severe spatial and racial disparities: Infant mortality rates are 7 times higher in the black population than in the white population, with black infant mortality at 43 per 1000 live births. Poverty is acute in rural areas (Anon., 1995). While the national life expectancy is 63.2 that of the province is just under 60. This gives an indication of access to health services, nutritional status, violence and sanitation. Indicators of human development, including literacy, life expectancy, labour absorption capacity, income, education and health services are referred to in table 5.4.2. Regarding health indicators, the province score is below the average of the country and services are described as inadequate. A shortage of medical officials is evident with 746 practitioners serving its 3.6 million population during 1995. This is a rate of 0.2 per 1000 while the national average is 0.5.

Regarding water and sanitation the province caters for between half and two thirds of its population. In North West 34% of all roads are paved (Anon., 1995). During 1999 it was calculated that in the order of R98 million p.a. was required to maintain roads in North West while the budget was less than R60 million (Anon., 1999). An indication of access to education is given by the literacy rate, which stands at 70% in the province. This rate is the lowest of all provinces but the teacher to pupil ratio of 1 to 24 is better than the national average. However, school attendance does not compare favourably as 13.7% of 6-14 year olds did not attend school in 1991. The percentage of women in managerial and professional categories is 59%, the highest in the country (Anon., 1995).

The province has a relatively small economy. The economic sectors with the highest contribution to employment are agriculture, mining and services. The largest sectors in order of size are mining, community and social services, commerce, manufacturing and agriculture with shares ranging from 40.5 to 9% of GDP. As stated, the province hosts 9.3% of the country's labour force, but it provides formal employment for less than a proportionate number of workers. Almost 68% of total employment is provided in the mentioned sectors, with agriculture providing 13.9%. Mining also has a dominant

role in the economy. This concentration renders the economy vulnerable to fluctuations in international price and demand. Given that mining employed a quarter of the labour force in 1991, a decline in the sector's activities could cause a dramatic increase in unemployment (Anon., 1995).

Of the total labour force, 22.2% has no formal education, while 34.5% have a primary level education at most. North West's share in the country's GDP decreased from 7.6 % in 1980 to 5.6 % in 1994, mainly due to a sharp decline in agriculture's contribution from 14 to 8.3 % of the national value (Anon., 1995). The provincial economy grew at an average annual rate of 1.1% during this period. Primary sectors (agriculture and mining) lost ground as contributors to the GDP. Although the province appears to possess comparative advantages in production of agricultural and mining products, the economy became more diverse.

Income distribution is uneven and varies significantly between urban and rural populations, race groups and magisterial districts. A percentage of 44.3 of urban and 70.5% of rural households earn less than R10 000 p.a., according to a statistical macro-economical review of the DBSA (Anon., 1995). An earlier evaluation (Pieterse, 1984), states that 53% of all households in Bophuthatswana, earned less than R2000 p.a. with 19% earning over R4000 per annum. The average income in North West is also relatively low, if compared with provinces such as Gauteng and the Western Cape, while welfare, remittances and other income sources contribute significantly to household income (table 5.4.3).

Table 5.4.3: Structures of rural incomes for some provinces with percentages of various income sources (McDonald & Piesse, 1999):

| | Percentage of total income | | | | | | |
|---|---|---|---|---|---|---|---|
| | Mean direct income (R) | Wages | Profits & Investments | Pensions | Welfare | Remittances | Other |
| Gauteng | 54 277 (1) | 54.2 | 37.2 | 7.2 | 1.2 | 0.2 | 12.9 |
| West. Cape | 41 649 (2) | 36.3 | 60.9 | 0.7 | 1.8 | 0.3 | 13.9 |
| North West | 24 502 (3) | 32.6 | 54.4 | 0.9 | 7.3 | 4.9 | 24.7 |
| Kwazulu Natal | 22 112 (5) | 55.5 | 26.7 | 2.1 | 10.4 | 5.2 | 26.2 |
| East. Cape | 15 082 (9) | 44.1 | 26.4 | 1.6 | 18.3 | 9.7 | 16.6 |
| SA mean | 21 052 | 51.2% | 33.0% | 2.2% | 8.8% | 4.8% | 21.1% |

In the 1999 budget speech it was revealed that the unemployment rate of 32.8% in the province is set to rise to 43% by 2001 (Anon., 1999). However, if economic growth of 5% is achieved, unemployment could decrease to 30%. According to the budget speech, 57% of the province's population live in poverty (almost double the 30% mentioned earlier) and regarding income inequality, the Gini coefficient of 0.67 is amongst the most unequal in the world. A decline in employment in commercial agriculture is expected, with intensified mechanisation as farmers become more globally focused (Anon., 1999). Agriculture has a vital role to play in transformation and development, as it is the basis of the economy of the province. Development of agriculture is linked to growth, food security etc. Seen in the light of high unemployment, developing a growing agricultural industry will have a significant influence on employment and development. The urgency of appropriate support models such as the project approach is clear.

## 5.5 Recent agricultural policy, support systems and performance

### 5.5.1 Policy and services development

After the first democratic elections during April 1994, the structure of institutional agricultural support services in the newly proclaimed North West Province changed drastically. These changes were influenced by national initiatives to deregulate and liberalise the agricultural sector, as discussed in chapter two. A provincial Department of Agriculture with delegated powers was initiated. Of the 27 magisterial districts in North West, 11 originate from Bophuthatswana, constituting almost four million of the 11 million hectares, or 33.4% (Anon., 1997). The two major organisations, Agricor and the Highveld Region of the previous national Department of Agriculture merged in a drawn out process into one public organisation: the provincial Department of Agriculture, which after the next elections of 1998, became the Department of Agriculture, Conservation and Environment (NWDACE).

The province is divided into three regions with regional Field Services Directorates and its extension personnel, supported by Technical Support Services (Research), based at Potchefstroom. Departmental headquarters are based in Mafikeng. Several supporting institutes were developed, such as the Directorate of Planning and Information and the Kgora institute that focuses on development of small-scale enterprises, etc. Other major players in the province include the ARC, with the Grain Crop Institute, also active in collaboration projects with the Department. The major cooperatives, North and South West Cooperatives (NWC and SWC), the North West Agricultural Union (NWAU), the National African Farmer's Union (NAFU), GrainSA and other NGOs are also involved in the agricultural sector.

During 1997 a policy and a set of goals were determined in which the Department envisaged prosperous farmers who would contribute to the welfare and economic growth of the province, in a sustainable manner. The policy formulation process included workshops held with stakeholders throughout the province. According to compilers, it was informed and legitimate since it is based on the constitution, other policies and legislation strategies. In this policy extension service's impact was seen as limited. Accountability to clients and in-service training were seen as priorities (Anon., 1997). Social support programmes, particularly with regard to household food security received attention. The promotion of co-operative action between stakeholders was dealt with in detail. The need to promote agribusiness and encourage capacity building was highlighted. Marketing objectives dealt with the provision of market information and the promotion of marketing through the broadening of access to resources, skills and facilities (Anon., 1997; Anon., 1998b). The focus on linkages, human capital development and access to resources and services, supports the hypothesis of this study, that integration and quantification of diversity must be dealt with.

The role of the established sector with regard to food security, job creation and economic growth was acknowledged. With regard to the developing sector, research was to use indigenous and existing technology as point of departure while FSR was seen as a vehicle to understand and study farming systems (Anon., 1997; Anon., 1998a). According to an in depth analysis, research priorities in the

province include land care and livestock management, plant protection, on-farm value adding and marketing (Catling, 1998a). A land care programme to facilitate integrated, sustainable utilisation of resources in communal areas became a priority in the province. It was stated that thinly stretching resources across various objectives would have a low success rate and would be wasteful. A concentrated effort on high priority objectives was proposed (Anon., 1998a). Facilitating participation in projects and decision-making to enable farmers to take control and responsibility was seen as priority (Anon., 1997: Anon., 1998a). Key issues to be resolved according to a five-year plan were the promotion of sustainability, resolving structural constraints, improving support and providing of basic needs. Activities highlighted were restructuring and reviving extension and research to engage the emerging sector. To establish and build the capacity of agricultural co-operatives as vehicles of development was also highlighted. During 1998 a proposed client register was to be established and a survey of natural resources undertaken. The establishment of regional co-ordination forums was also seen as a priority (Anon., 1998b).

Regarding the various development projects inherited by the previous dispensation, most were terminated. Because of a lack of management skills, the viability of these projects decreased, as did participation. Some projects that continued became a financial burden to the NWDACE. Another type of project has been initiated since the late nineties: Development-oriented projects are facilitated through various public and private support services and large amounts are spent, often with limited preparation, the main reason being that political pressure to show progress has not decreased since the Homelands era. Although some form of assistance is warranted, a commitment by potential participants should be provided (De Beer, 1999). Some prerequisites are crucial to enhance commitment. Individual responsibility and accountability in particular must be enforced (Van Rooyen & Nene, 1996). Prerequisites that can be isolated include demand driven projects and selection of groups on specific criteria; i.e. attitude, aptitude, experience. This points towards the need for a structured, revived project approach.

Since 1999 the NWDACE focused on accelerating sustainable and integrated rural development as part of an attack on poverty. It envisages an equitable and sustainable sector, enhancing livelihoods throughout the province. Its mission is to provide services towards sustainable natural resource use that supports a competitive and equitable sector. In this regard it fully endorses the national strategic objectives of equitable access and participation, improved competitiveness and profitability and sustainable resource use and management and the NWDACE subsequently accepted these principles during 2002 (Anon, 2002). To a large extent, provincial agricultural policy links up with national agricultural policy, but a somewhat more focused approach is used to deal with the priorities typical of the province.

The challenge in the largely rural North West province with a poverty rate of over 50% is to effectively manage the sustainable use and development of the natural resource base. This resource constitutes a major competitive advantage as it underpins the 2 largest economic sectors, mining and agriculture, as well as the highest growth sector, tourism. The main problem; low profitability and competitiveness constrain participation. A major opportunity for the poor to participate in the economy therefore lies in the use of natural resources. Specific interventions and incentives are to be provided to remove barriers to entry

by those previously disadvantaged. In this respect some specific strategic objectives include (Anon., 2002):

To contribute to household food security initiatives
To facilitate and implement land reform projects
To facilitate access to affordable services
To create awareness of the opportunities in the sector
To enhance competitiveness by facilitating infrastructure development and input costs reduction
To develop and transfer competitive and appropriate technology
To engage in human resource development
To facilitate the development of accessible markets
To enhance profitability by facilitating the dissemination of information

The Department participates in the Integrated Development Programme (IDP) processes of local municipalities and is represented in all the IDP forums to ensure that departmental programmes form part of the IDPs. Furthermore, the Department plays a key role in the Integrated Sustainable Rural Development Programme driven by local municipalities (Anon., 2002).

### 5.5.2 Agricultural performance

Of the total area of the North West province, 81.1 % is agricultural land. Based purely on land potential, the contribution of agriculture in the North West could be enhanced. Almost a third (28.3%) is potentially arable, while 56.8% is grazing land and 6.4% is used for conservation. During 1993 roughly 7500 commercial farming units covered approximately 6.1 million hectares and just more than 9000 commercial farmers employed 125 000 workers. Animal husbandry with a contribution of R1 262 million and field crops with R530 million were major enterprises (Anon., 1999). Crop production has shown a distinct reduction in recent years (as have the number of commercial farmers) due to economic viability problems. However, next to mining, agriculture remains the most important economic sector in the province with a 5.6% contribution to GDP and a 17% contribution to employment. Farm income in the 1995/96 season was R2650 million while maize planted totalled 1.26 million ha on which 3.15 million tons at an average of 2.5t/ha was produced. A total of 66 000 tons of groundnuts at 0.89t/ha and 269 000t of sunflower at 1.1t/ha was produced in the same period. In 1995 cattle numbers totalled 1.18 million, goat numbers 87000 and sheep numbers 477000. More than 50% of livestock owners (23% of all households) owned one to five heads of cattle (Anon., 1999).

It is estimated that 85% of rural households practice a form of animal husbandry, but only 4% are full time farmers. Only 0.3% is estimated to own more than 50 cattle. Grazing land is estimated at 7.2 million ha. Grazing capacity gradually decreases from 4 ha/LSU to almost 20 ha/LSU in the dry west (Beuster, 1985; Anon., 1997), but the average carrying capacity of 10 ha/large stock unit, provides for 720 000 head of cattle (Anon., 1998b). The actual number of cattle is estimated at 1.5 million, evidence of overstocking, compromising the sustainability of the livestock industry (Anon., 1998b).

Developing areas lack financial services and cattle are often used as investment to save capital (Anon., 1998b). Adding to the high cattle numbers, 0.8 million sheep, 0.5 million goats and 0.17 million pigs are found. North West produced 20% of national feedlot output with 250 000 head of cattle annually (Anon., 1997). The province provided 14.7% of the national income from field crops, 0.8% of national income from horticultural crops and 5.3% of the national income from livestock during the late nineties (Anon., 1998b). The agriculture and conservation sectors remain important to the provincial economy contributing 13% of total gross domestic product and 19% of formal employment early in the 21st century (Anon., 2002).

The province is served by two agricultural companies (North-West and South-West Co-operative), both of which underwent structural change during the deregulation process. Numerous primary co-operatives in the developing areas are largely inactive and although some interaction with the two major organisations is developing, a vacuum has developed with regard to support to the developing sector (Anon., 1997). According to the a study done by the Agricultural Union of the province (Agri-North West) during 2001, agriculture and specifically the roughly 6500 remaining commercial farmers were responsible for 43% of the province's GNP while 160 000 direct jobs are involved. Apart from food production, agriculture also provides a tax base, foreign exchange, and welfare, and is an important custodian of natural resources.

During 1999, indications were that a significant number of farmers could go bankrupt after the serious drought. Through the mediation of Agri-North West and the NWDACE, an application for drought relief assistance was developed. After a screening process, 278 commercial and 1 523 emerging farmers qualified for support and a proposal with this recommendation was presented to government. The estimated cost for this support scheme was just over R10 million, but no action was taken. Given the fact that these farmers were identified through the action of Departmental officials that tried to involve all those agriculturally active, it could be argued that the 1500 farmers that qualified, represent the largest portion of the commercially oriented emerging farmers in the province.

As in 1983, expert opinion during the late 1990s was that the agricultural sector in the province did not contribute according to potential towards economic growth and in fact showed a negative growth rate since 1988 (Anon., 1998a). Outputs were primarily aimed at the manufacturing sector and food, beverage and tobacco sub-industries were dominant. Positively, exports from the province were substantially higher. Promoting agriculture should have a stimulating effect throughout the economy and is an obvious vehicle for rural development. Agricultural investment results in the highest ratio of employment to output of all sectors (Anon., 1998a). It is estimated that present production levels in communal areas are at 16% of the potential, illustrating significant growth possibilities.

The effect of deregulation and globalisation also impacted on the agricultural sector of North West. Although meat and grain products are more expensive in most developed countries, due to the subsidisation of their markets, these countries can efficiently export to SA, undermining local producers. Input costs remain a major concern. As can be seen from prices in table 5.5.1 and the enterprise costs and yields needed to cover costs in table 5.5.2, the effect of the "price squeeze" is significant.

Table 5.5.1: Expected prices for major crops of North West, with given yields for the 2000/2001 season (Conradie, 2001).

| Maize | | Sunflower | | Groundnuts | |
|---|---|---|---|---|---|
| Yield (t/ha) | Price (R/ton) | Yield (t/ha) | Price (R/ton) | Yield (t/ha) | Price (R/ton) |
| 1.93 | 876 | 0.97 | 1 647 | 0.63 | 3 111 |
| 2.25 | 751 | 1.00 | 1 558 | 0.80 | 2 418 |
| 2.50 | 686 | 1.20 | 1 315 | 1.00 | 1 960 |
| 2.75 | 633 | 1.40 | 1 141 | 1.20 | 1 654 |
| 3.0 | 588 | 1.60 | 1 011 | 1.40 | 1 436 |
| 3.25 | 551 | 1.80 | 910 | 1.60 | 1 288 |

Table 5.5.2: Enterprise costs and yields required to cover costs in North West, for 2000/2001 (Conradie, 2001).

| | Total enterprise costs | Yield to cover cost (expected yield) |
|---|---|---|
| Maize | R1690 | 2.7t/ha (2.5-3) |
| Sunflower | R1598 | 1.04 (.8-1.2) |
| Groundnuts | R1960 | 0.95 (1-1.5) |

Extensive evidence suggests that the unacceptable levels of debt will give rise to increasing bankruptcies – as many as 20% of farmers in the province are currently at risk (personal communication, W Auret, NWC, 2002). The reasons given by agricultural companies include (in order of importance) the "price squeeze", high debt and poor financial management. Since 1998 59% more loans were dismissed in the province. The number of clients acted against rose by 63% while the amount in question rose by 255%. The amount loaned rose by 99%, implying that more producers are now dependent on credit. Although climatic conditions play a role, the uneven playing field in the international economy, the `price squeeze´ and crime also contribute. Looking at a 25% debt relation (in reality the figure is closer to 32%); a cash flow budget indicates that a production of 5% above the average would be enough to make a profit. However, at a 50% debt rate, even yields 10% above mean production would not be sufficient for a profit (Conradie, 2001).

The 'cost/price/profitability squeeze' also relates to the developing sector, as enterprise costs are also the concern of the small-scale farmer, whose agricultural enterprises form part of livelihood strategies. Without these enterprises food security is in jeopardy and a heavier burden on welfare resources could result. The low number of small-scale farmers that actually planted in the province during the 2000/2001 season bears testimony to the squeeze. At Sheila, where roughly 200 land right holders could potentially plant, only 15 farmers planted during that season, the main reason being lack of credit. Innovations to lower costs as established by Vink (2000) in the commercial sector are also relevant in the small scale sector: using fewer inputs, planting only higher potential lands, more intensive production etc. Some small-scale farmers mix seed harvested from various maize cultivars, and plant a selected portion, retaining vigour and (apparently) obtaining good yields, circumventing a significant input cost, seed. The agricultural scenario is simplistically summarised in a problem tree (Figure 5. 2. 2).

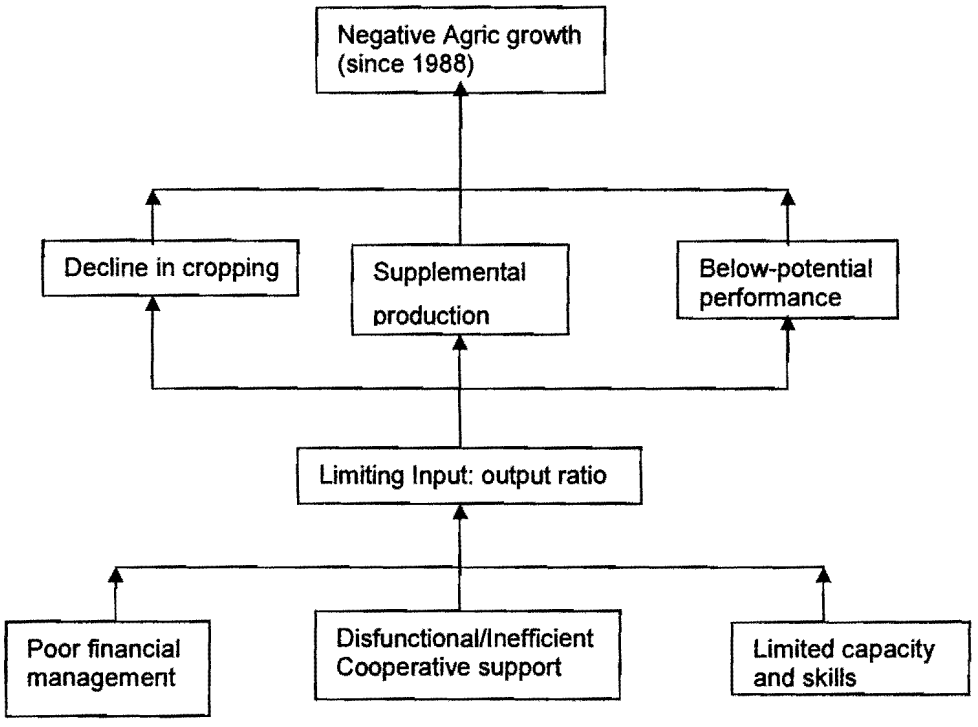



Figure 5.2.2: A problem tree description of agricultural constraints in North West.

## 5.6 Descriptions and classification of Northwest's farmers

The importance of categorising farmers in order to focus support according to needs received extensive attention in chapter two. Consequently a typological categorisation is proposed in the methodology. Farmer categories in the province should facilitate sound support, as argued comprehensively (Low, 1986b; Eckert & Williams; 1995; Laurent, *et. al.*, 1999; Perret, *et. al.*, 2001). This will be extensively dealt with in the case study, as reported in the next chapter. It will, however, be worthwhile to quantify the economic and political focus in the province and to reconcile this with groups previously identified and described in the province.

The NWDACE policy deals extensively with the question of the client. A significant shift towards the previously disadvantaged is obvious, but as argued, the developing sector is not a homogeneous group and should not be treated thus. Policy during the initiation of the NWDACE identified three levels of categorisation as point of departure; viz. the established, developing and subsistence sector (Anon., 1998b). Although these broad farmer categories are recognised, these are not homogeneous and sub-division is warranted to ensure a focussed, effective approach to support. Targeting support measures such as credit, investment grants, etc. can then be facilitated.

Although a detailed farmer typology with several types will be developed in the case study, previous categorisation efforts deserve mention. According to the Departments position paper on agriculture (Anon., 1998b), rural households can be categorised into four groups, in terms of resource access and commercial orientation: Resource poor households with no land comprise about 31% of the rural population. Small holders operating below subsistence level without selling any produce comprise 56%. This second group fits the description of a subsistence level. Progressive farmers that adopt some technology and sell some produce and or livestock comprise about 13% of the population. They represent the developing sector. Market oriented commercial farmers, the established sector, comprise about 0.2% of the population. This classification neatly fits the described classification of Bembridge (1988) and those of scientists (Karodia, 1994; May, 1996; Eckert, 1996) described earlier. In table 6.5.1 a summarised version of categorisation efforts for the province's agricultural population is provided.

Table 5.6.1: A description of the agricultural population of the North West province.

| Model source | Description | Categories | Reference |
|---|---|---|---|
| Conventional thinking | Commercial & developing sector | 6000 full time, large scale farmers with an established enterprise + 50 000 part-time, small-scale farmers, with a degree of success | Popular press |
| 1996 Provincial policy: | Three levels of support: | Established developing and subsistence sector | Anon., 1998b |
| 1998 Position paper | Four groups based on resource access & commercial orientation | Resource poor , landless households - 31%<br>Small holders not selling - 56%<br>Progressive farmers some selling – 12.8%<br>Market oriented farmers, 0.2% | Anon., 1998b, supported in classifications by Bembridge (1988); Karodia, 1994; May, 1996; Eckert, 1996 |

The commercial sector consists of roughly 6000 mostly full time, relatively large scale farmers with an established enterprise (personal communication; W Auret, Agri-North West, 2002). Previous policies proposed that it should receive mainly legislative and administrative support (Anon., 1998b). However, the impact of this sector on the broad economy, linkages, and employment creation warrants more substantial support. This is recognised in recent national and provincial agricultural policy (Anon., 2001b; Anon., 2002). It must be accepted that not all ruralites have the aptitude and attitude to be successful farmers. Commercial enterprises are effective labour markets, providing a safety net and opportunity for such people. The established sector is also responsible for stable food production and is a valuable asset to the provincial economy. However, in general this sector is articulate and can obtain support with relative ease, making it less depended on public support services (Bembridge, 1988).

The developing sector consists of farmers who have shown a degree of success and understanding of agriculture. They have access to land and other resources and are committing these towards production. This group comprises roughly 60 000 households of which roughly 10% have serious potential to become commercial, if the reasoning discussed in chapter 2.4.2 is followed. Roughly 50% of the population of the province is rural; entailing 1.85 million people or at an average household size of six, 308 300 households. On average, 20% of the rural population is actively interested in agriculture, consisting of roughly 61 700 households in North-West, of which 10% (6000 households) could potentially be commercial. These farmers should be an important target group for support. From another angle: in North West, 20% of the rural population does not practice agriculture (62 000 households), while 185 000 (60%) practice only limited agriculture. Roughly 56 000 (18%) have experience and show signs of commercialism and 6200 (2%) are commercial. Ten percent of the 56 000 with potential, again calculates to a figure of roughly 6000 households, who should be the main target.

In many cases an improvement in access to inputs, skills, credit and markets could have an extensive positive impact for this target group. A convincing argument can be made for particular focus on this group, given their potential as well as the budgetary realities of the Department. Limited resources force support services to focus on areas where production increases stimulating the economy is most likely. Serious, committed farmers must be a focus group, even if the majority of them are part-time farmers (Eckert & Williams; 1995). The progressive farmer, who owns and operates his farm, which can bear the risk of innovation and provide jobs to resource poor farmers as well as generating a surplus for the market must be resurrected. This group is a positive force in getting agriculture moving (Eicher, 1988; Stevens & Jabara, 1988). Adapted technology is required for this group as are other forms of support to increase efficiency and production (Bembridge, 1988). Public interest should emphasise the activation of linkages and multipliers and in so doing, stimulating development. Stimulating efficient input and output markets and marketing policies is also vital for this group (Van Rooyen & Machete, 1991).

The third sector although consisting of subsistence type farmers cannot be neglected, mainly because of food security and welfare implications. Support should be available to people who show interest in agriculture. A major provision is that no handouts should be provided. Farmers must show

commitment by a contribution of sort. Packaged development programmes with high replication value, which can be repeated in many areas, should be available at request. These should be simple, acceptable and easily reproducible. In general, skills in this sector are limited but some farmers will be able to improve production, although it is not expected that a large proportion will be successful, due to a lack of ability or interest (Van Rooyen, 1983). Despite limited assets, managerial capacity and physical stamina (Bembridge, 1988), this group will benefit indirectly from improvement in the structural situation and success in the community. The NWDACE has a limited mandate regarding inactive ruralites, but has a social responsibility towards the provision of minimum basic needs. As infrastructure and support improves, the quality of rural life generally should improve, also affecting the landless. Programmes should focus on elimination of constraints and addressing basic needs, in order to improve the livelihood of this large rural grouping (Van Rooyen, 1983). Capacity building is crucial. All those that by necessity practice some form of agriculture should not necessarily always continue to do so, and other alternatives should evolve. A project approach that deals with economic diversity in an agricultural community is the ideal vehicle to practically provide support to resources and services, based on the type of support required by a particular homogeneous rural grouping.

## 5.7 Focusing on the Ditsobotla projects

Following on the description of rural life in the North West Province, the focus becomes ever finer and now shifts towards the location of the actual field study, in a description of the district in which the project took place.

### 5.7.1 Physical description: Ditsobotla

Ditsobotla is a predominantly rural district that covers roughly 240 000 ha of which almost 203 000 ha is used for agriculture. Roughly half of Ditsobotla is formed from the former reserves Setlagoli and Kunana, with long-settled communities. The rest of the district is made up of land acquired from white farmers by the South African Native Trust, after the 1936 Land Act. Some of the settlements were formed out of communities that were forcibly removed from 'black spots' in the Transvaal from the late 1940s onwards (Francis, 1998).

The area is relatively flat with no mountains or hills. No permanent surface water is evident but underground water resources are fairly reliable (Stacey, 1992). Winds are predominantly northerly. The average annual rainfall varies between 500 and 600 mm. A high variation occurs, a major factor to be considered in determining yield potential and practices. Distribution within the season also fluctuates extensively. Soils are mostly sandy loams of the forms Avalon, Bainsvlei, Clovelly, Glencoe, and Hutton, ideal for crop production. Key temperatures prevailing in the agro-ecological zone are as follows: The mean day temperature during December is 23.1 and the night temperature 17.5 degrees Celsius. During June the corresponding figures are 19 and 4.4 degrees Celsius (Bembridge *et. al.*, 1982).

The district contains the wards of Sheila, Gannalaagte, Mareetsane and Lotlhakane. In the Sheila ward where the study will focus, nine villages are found. These are Sheila, Verdwaal (1&2), Springbokpan, Matile (1&2), Schoongesicht, Welverdient and Bodibe. Farmers in the villages of Sheila, Verdwaal and Springbokpan were participants in the extensive consultation process.

The total population of Ditsobotla during 1999 was approximately 194 000, with an urban component of 16.3% and a HDI of 0.41, which is much lower than the HDI for SA (calculated at 0.71) and even that of the North West province on 0.54. The population is highly stratified, with income and assets distribution skewed by class, gender, ethnic identity and date of arrival (table 5.7.1). This stratification is bound up with inequalities of voice and power. Attempts to tackle rural poverty need to address these diversities (Francis, 1998).

The male component of Ditsobotla comprises 47.6% and the female component 52.4%. Of the total population 14650 people have a primary school education, 10 420 a secondary school education and 663 a tertiary qualification diploma while 63 obtained a degree.

Table 5.7.1: Occupational breakdown for the Ditsobotla district (www.statssa.org.za)

| Occupation | Number of people |
|---|---|
| Professionals | 2690 |
| Mining industry | 530 |
| Manufacturing | 1525 |
| Managerial/Administrative | 67 |
| Clerical/Sales | 1158 |
| Transport/Communication | 1132 |
| Services | 4000 |
| Agricultural industry | 2352 |
| Unskilled labour | 6004 |
| Unspecified | 18 600 |
| Total (officially employed) | 35 850 |

While large numbers of people in Ditsobotla lack land, jobs, and decent housing, there are also successful farmers producing extensively. Many people have access to land, but lease it out. The district was also the site of one of the largest agricultural programmes in Africa; the Ditsobotla dryland projects (Francis, 1998). During June 1999, there were 1451 male and 474 female farmers in Ditsobotla (less than 10% of the total population), of which 61.2% had a limited education up to std. 5. In terms of livestock, the Ditsobotla district had 38600 head of cattle, 36700 sheep, 29700 goats, 2200 pigs, 1500 donkeys and 1050 horses for a total of almost 110 000 animals. Roughly 35% or 71 000 hectare is suitable for dryland cultivation while the rest comprises overgrazed veld. It is a fairly homogeneous cropping area, mainly used for summer crops such as maize, sunflower and on a smaller scale, groundnuts.

### 5.7.2 History of the Ditsobotla projects

The Sheila area was acquired from white farmers in terms of the 1936 land act, settled between 1936 and 1944 and planned under the 'Betterment' scheme in the early 1950s. People were allocated house and garden plots in defined wards, as well as arable allotments. Grazing areas were fenced off, boreholes developed and a number of schools were built. Gradually tractors replaced oxen as the source of draught power. Local government consisted of a headman, sub-headmen and councillors for the various wards, under the jurisdiction of the Bantu Affairs Commissioner. These tribal authorities with a headman appointed by the President were eventually replaced with a regional authority. This body handled land allocation, tribal and legal disputes (Bembridge *et. al.*, 1982).

The first pilot project of Bophuthatswana's Department of Agriculture was initiated at what was known as Sheila, comprising three wards and 3500 ha of arable soil, of which 1700 ha was being utilised poorly, with yields of less than a ton/ha. At this stage mechanisation was numerically inadequate and in poor condition (Bembridge *et. al.*, 1982). The Sheila project commenced during 1976/77 with a contractor system. The objectives of the project held in improved utilisation of land, selection and training of contractors, increased efficiency and the formation of primary co-operatives. In the long

term the aim was development of the district's agricultural potential and improved living standards (Bembridge *et. al.*, 1982).

The commercial co-operative in the region, Noordwes Cooperative (NWC), together with agribusiness concerns, became heavily and profitably involved in input provision to the project. The Cooperative collaborated with the Bophuthatswana government through Agricor: It was approached to assist departmental extension with management and financing of the project. The total investment of the Cooperative during the first season was roughly R460 000. Less formally, some white farmers organised open days on their farms for 'informal extension' with black farmers (Francis, 1998). Officially 196 farmers were involved in the initial project, but 31 contractors did most of the farming. Contractors were allocated an average of 130 ha to work, including their own. Inputs were supplied by NWC on a credit basis and channelled through the primary co-operative. Services included tractors, parts, fertiliser etc. Lands were cultivated as a unit while cost division and profits were calculated in the extension office. Loans for inputs were made through the Cooperative. Contractors received loans for tractors, equipment and fuel. Springbokpan joined in the project in 1979/80. Sheila primary co-operative (including the villages Sheila, Verdwaal and Springbokpan) was established in 1981/'82 with roughly 400 participating farmers of which 19 were contractors for mechanisation (Bembridge, *et. al.*, 1982). This study will focus on the initial Sheila project.

Following a successful first season, the Department of Agriculture in Bophuthatswana decided to expand the project on similar lines to farms comprising the much larger Mooifontein project, with management through the Corporation for Economic Development (CED). The projects expanded rapidly during the early 1980s and eventually comprised the northern half of the Ditsobotla district (Bembridge *et. al.*, 1982). National pride in the fact that Bophuthatswana was self-sufficient was evident during the late 1970s, as Ditsobotla produced 23% of domestic consumption.

During the 1980/'81 season Sheila produced maize with a value of R9.5 million. The farmers involved, shared a profit of R3 million. In total, 6511 ha was involved and almost 10 000 tons of maize with an average production of 1.54 t/ha was produced (Bembridge *et. al.*, 1982). By 1985 project management was relegated to Agricor. Loans worth R6.6 million were granted. Membership of the primary co-operative was open and it also provided a retail service. On 31 March 1984 Agricor employed loan capital to the total value of R28.55 million in Ditsobotla of which R5.42 million was spent at Sheila. Fixed assets of R4.1 million, project debtors of R15.84 million and net current assets of 4.83 million totalled R24.76 million. However, changes of debt recovery were described as very slim. During this season a net direct benefit of R120.11/ha was achieved at Sheila. Given a yield of 2t/ha, a net profit for the 15 ha plot of R1108 was envisaged, if debt was written off (Stilwell, 1985). At this time a 'good' harvest entailed ± 2.2t/ha and a net farm income/ha of R250 (Stilwell, 1985).

The majority of farmers expressed satisfaction with the project in evaluations conducted during the early eighties (Bembridge, *et. al.*, 1982). Advantages as perceived by farmers included the availability of mechanisation, credit and management 'doing everything'. Holdings increased significantly in size while yields and returns per farm improved. This resulted in more food, clean water, improved housing

and income, healthier children and thus a higher quality of life. The added expenditure focused, in order of importance on house improvements, furniture, education, vehicles and clothing.
Community members not involved in the project (non-participants) felt that they learnt better practices from the project, but also recognised that participants were mostly passive. Most non-participants perceived a favourable project impact through increased knowledge and financial spillovers. While tribal farmers would have liked to participate in the project, more commercially-inclined farmers in the district were not interested, reasoning that they had tractors and implements and were better off making their own decisions. Most non-participants were however members of the primary Cooperatives at Sheila or Mooifontein but perceived that they got less attention from extension since the project started. Traditional leaders felt that their position was threatened by modernisation in general, but were ambivalent about the project in particular. While they welcomed the improved living standards resulting from the projects, they also associated a perceived increase in poor family relations and criminality with the project, as an indirect impact. Other non-participants such as teachers and traders felt that indirect project impacts were mainly positive (Bembridge *et. al.*, 1982).

### 5.7.3 Infrastructure

During 1979 the Ditsobotla district had 52 villages with two hospitals, 3 clinics, eight post offices and 73 schools and 21 primary co-operatives. An extensive road system linked settlements spread randomly through the district, but no central arterial road given easy access to all parts existed, restricting movement of quantities of goods. Many roads were incapable of carrying heavy loads (Potgieter, 1980).

During 1996, 35 150 houses existed in Ditsobotla, of which 3210 had been electrified, 2180 had water in the house, 1106 had water on site, 16437 had a communal tap and 15 396 used other means. Only 2208 had full waterborne sanitation, 528 used a septic tank, 414 a bucket and 31990 a pit latrine or other system. Ditsobotla had 2 hospitals and 17 clinics, 13 general practitioners, 29 nurses, 1 dentist and 2 pharmacists.

In general, infrastructure in the area today is relatively fair for a rural district. Water supplies are derived from wells and boreholes and are relatively accessible although isolated shortages sometimes occur during wintertime. More than half the watering points are open to contamination. In terms of water, a standard determined by the Department of Water Affairs and Forestry is standpipes at 200 metre radii. In Ditsobotla, 140 000 people do not have access to this standard. Only 528 households in Ditsobotla have sanitation in the form of septic tanks (Anon., 1999b). The electricity network is mostly restricted to the major township, public service buildings and the more affluent in the village community. A number of small post offices are scattered through the district. The only mining industry is an opencast limestone mine near Itsoseng and some small brick making undertakings. One commercial bank is available in Itsoseng. The villages are neat with the majority of the houses built from bricks, with corrugated iron roofs. Primary schools in the area are functioning and a secondary school is available in the town, Itsoseng. In many cases inhabitants, especially farmers do have some form of transport in the form of trucks, cars or animal drawn carts. Personal disposable income in the

district rose from 122.8 million to 165.7 million from 1985 to 1990 (Anon., 1995; Anon., 1997; Anon., 1999b).

In an extensive participatory exercise throughout the central districts of North West (Anon., 1999b), development priorities were determined in various community workshops. The key priorities are infrastructural services, specifically water, electrification and roads. The first ten requirements in order of priority were; water, education, roads, land, emergency services, electricity, housing, post and telecommunication, job creation and transport. Literacy was the 15$^{th}$ priority and agriculture was 17$^{th}$.

### 5.7.4 Tenure

Two types of tenure system exist in the area. The majority of land is so called trust land and effectively belongs to the government, but is managed by the local authorities. A small portion of the land is tribal or communal land where the traditional authority also determines land allocation. These units differ in size and in general are smaller than 15 ha each. The status of a farmer in the community and his relationship with the chief can influence the size of the plot he is allowed to work. Subdivision is common as the land of a father is often divided between sons. In both the trust and communal situation, farmers do not have real property rights on the land, insofar as they could use it as collateral for credit. In practice there is little actual difference in land rights between communal and trust land.

Land ownership in Ditsobotla today is unequal and class-structure is evident. Sharecropping is common, also involving neighbouring white farmers. Stacey (1992) estimated that two thirds of the Ditsobotla and Molopo districts were sharecropped. Large-scale land distribution seems unlikely and will probably be driven by market forces. The increasing rural-urban wage differential cause decreases in land use, enhanced by the shift away from the security value of land. This, coupled with capital scarcity and low returns to traditional farming enterprises, limits the possibilities for increases in commercial farming. Improved access to services will have a positive influence, as will tenurial adaptation (Francis, 1999).

Previous attempts to establish a smallholder farmers group were relatively unsuccessful. The tension between landholders that do not utilise their land and non-landholders that want access to land is also problematic. The key to a successful group of small-scale farmers will be effective pooling arrangements and co-operation with agribusiness. Contract farming is likely to become increasingly common and has significant potential, provided that equitable arrangements between the stakeholders (producers, buyers) can be achieved. However the importance of multiple livelihoods must be recognised and encouraged, as agriculture is not the solution for all (Francis, 1999). The elements required in this description again point towards integration, as inherent in the project approach.

### 5.7.5 Agricultural activities

In an intensive field study, Potgieter (1980), established that 16% of the population of Ditsobotla was economically active. The district's annual turnover was in excess of R40 million. Unemployment was

51%. Almost 30% of the population were literate. Public sector contribution to agro-industries to the extent of 90% of all contributions, illustrate that government's involvement in development was intense (Cuthbert, 1993). Cultivation was intensive with 35 000 ha of maize and 2900 ha of sunflower. Cuthbert (1993) reported livestock numbers of 165 000 and 37 000 poultry. Approximately 26 000 ha was used in projects while 30 000 ha was state land. Ditsobotla produced 23 000 tons of grain during 1978/79 (Worth, 1980). Constraints identified were the sub optimal land use system, extensive migration and the projects effectively separating many people from their land. In terms of agricultural livelihoods, the district is estimated to provide for 2600 full time and 2500 part-time farmers. Only one in four of those economically active in the district could therefore be agriculturally active within its borders (Anon., 1998b).

Cattle played a role in the project area with 13% of participants even indicating that they preferred livestock to crop farming. The average farmer had 4.6 head of cattle, 2.2 sheep, 0.9 goat, 0.3 donkey, 10.5 poultry and roughly five livestock units in total. These figures indicate a 25% drop in livestock since the initiation of the project, which is insufficient given the significant reduction in available grazing. Calf mortality of 20% and an average milk yield of three litres per cow per day further illustrate this. Malnutrition was the main cause for high mortality and low reproduction. No grazing management existed. There was little prospect of increased cattle off-take on an individual basis.

Many farmers utilise land as an important means of generating income, by marketing at least part of their produce. Several variations of leasing land developed during the past decade (Stacey *et. al.*, 1994), partly as a result of the increase in rural-urban wage differentials, causing a decrease in land use by households with members that have a high opportunity cost attached to their time (Low, 1984). This resulted in more available land and expanded sharecropping as tenants lease more land from those who do not wish, or cannot utilise land (Stacey, 1994; Francis, 1999). This is a continuing and growing shift away from the security value of land and social custom.

This sharecropping can be described as a form of land hiring with the payment most often being bags of maize. Sharecropping has a long history in the area and was first documented as taking place between white settlers and local black farmers. Sharecropping agreements usually take place between consenting parties. Where a big demand for land exists, the land right holder is in a better position to bargain. The bargaining power of the land lessee is inversely related to the economic status of the landowner: The more desperate the owner, the more chance for a 'cheap deal' for the lessee. In most cases the agreement is verbal with disputes supposedly settled by the chief.

Sharecropping is an option for land right holders to gain income from land that otherwise would have been unused. Reasons for not planting themselves vary from lack of interest to lack of capital and access to inputs. Land lessees are commercially inclined and willing to take risks. They are mostly full-time farmers with the means of production (Schmidt, 1989). Some landowners with limited resources engage in an ordinary lease agreement where they are compensated for the right to utilise their land. However, depending on the resources available, various types of arrangements occur. Some landowners finance all inputs, except mechanical cultivation practices. In these cases the

owner has more bargaining power and can negotiate a favourable agreement. This is elaborated upon later on in the following chapter.

The described transformation towards commercialisation, although slow, has profound consequences for the communities involved (Stacey *et. al.*, 1994) as it leads to the creation of a commercial farmer class as well as groups of wage labourers and land right holders who lease out land. The commercial class, who developed their enterprises through investment, does not necessarily have links with either the tribal or political structures, but they exert a large measure of political influence. A consequence is less equitable distribution of land. During phases of recession and unemployment these farmer's positions are strengthened, with labour becoming more available. Drought also consolidated their hold on the land, as capital became scarce and smaller farmers with fewer assets were unable to withstand the financial pressure and larger farmers were in a better position to obtain loans (Stacey *et. al.*, 1994; Francis, 1999).

If the previously used assumption that 20% of the rural population countrywide is interested in agriculture is extrapolated to the North West province, interesting results are found: Half of the North West population is rural; some 1.9 million people or 317 000 households. If only a fifth of them are actively involved in agriculture, this constitutes 63 300 households. If the argument is concluded, it means that roughly 6400 households have the potential to be commercial – to some extent. For Ditsobotla with a population of 194 000 (of which 16.3% is urbanised), this scenario entails 27 000 rural families and thus 5400 farming families, of which 540 could be potentially commercial, according to this reasoning. However, Roodt (1983) argued that a total of 2100 households could conceivably find an agricultural livelihood in Ditsobotla. Still, it can be argued that given the limited agricultural activity of most ruralites, there is potential yet unexplored.

## 5.8 Conclusions

The North West province covers 11.8 million hectares and houses roughly 3.6 million people. It is semi-arid but has potential for dryland cropping, although more than 80% is primarily suitable for extensive grazing. More than 50% of households are described as poor. The province has a relatively small economy, while the sectors with the highest contribution to employment are agriculture, mining and services. The unemployment rate is 43%. Next to mining, agriculture is the most important economic sector in the province. The agriculture and conservation sectors contributed 13% of total gross domestic product and 19% of total formal employment early in the 21st century. This excludes extensive indirect effects. However, the sector does not contribute towards economic growth according to potential.

During the seventies agriculture was considered the foundation of the economy in Bophuthatswana and Agricor was established to promote food production and human development. The mainstay of development was projects, based on a technocratic approach with focus on maximum production. When previous support approaches are evaluated using project design criteria identified in this study, deficiencies in aspects such as participation, co-ordination and social sustainability are obvious. Especially commonality of objectives, equity, cost saving and reconciling technology with social realities did not receive sufficient attention. Although the support philosophy and strategies were generally sound, the political situation created pressure and services-impact was minimal. To a large extent Bophuthatswana remained dependent on the RSA, as economically viability was not achieved.

Since democratisation support services for small-scale producers have changed extensively and the NWDACE has as mission to provide services towards sustainable natural resource use that supports a competitive, equitable sector, endorsing national policy. Specific strategic objectives include facilitation of land reform, access to services, infrastructure development, input cost reduction, sound technology development and transfer, human capital development, accessible markets and information dissemination. Although these objectives are indeed required, the elements of dealing with diversity and lowering costs do not receive enough attention. The new policy deals in general terms with the need for co-operation, linkages and appropriate technology, but does not dwell on group-specific strategies and specific programmes or projects. This will be explored in the next chapter.

The recent deregulation and globalisation on the agricultural sector had a significant effect on agriculture in the province, as in the rest of South Africa, as described in chapter two. In real terms, grain prices have during 2002 for the first time reached levels higher than those obtained during the 1970s. Whilst these favourable prices resulted in benefits to producers, organised agriculture maintains that input costs are still a major concern over the longer term, as are the high levels of debt which could lead to increased bankruptcies. Without a structured development strategy, which from the viewpoint of this study entails a specific group focused project approach; the prospects for the developing agricultural sector are not favourable. The project approach is further investigated in the following chapters.

# CHAPTER SIX: EVALUATION (EX POST) OF THE SHEILA PROJECT

## 6.1 Introduction

### 6.1.1 Background

As argued extensively in chapter three, the project approach in theory constitutes an ideal strategy for economic agricultural development. The mixed results achieved throughout the developing world and in South Africa with this approach, therefore warrants comprehensive analysis, to isolate constraints in implementation and inherent constraints in project design. As described in chapter four, a variety of project impacts are to be determined in this analysis, including institutional, financial, economical and social impact as direct impacts, an effectiveness analysis as well as indirect impacts such as linkages and spillovers. This will be done in recognition of the hypotheses of the study that economic diversity in a rural population must be dealt with, while integration between stakeholders through a project is required to mitigate the effects of high costs. The potential effect of project design criteria identified will also be evaluated. A thorough empirical investigation should isolate aspects that previously constrained the project approach.

### 6.1.2 Preparation and procedures

In this chapter the *ex post* assessment of the Sheila project from its inception in 1977 until its termination in 1994 and beyond is described. Project analysis also deals with policy analysis, as policy deals with how objectives are to be achieved through a strategy, from which a project originates (Gittinger, 1982; Van Rooyen, 1986). This analysis will therefore reflect to a large extent on the operational outcome of the policies of the Republic of Bophuthatswana (and through association South Africa) before democratisation in 1994. The projects in Ditsobotla were already subjected to impact assessment in the past, as it constituted a high profile agricultural development strategy. The interdisciplinary team of Bembridge *et. al.*, (1982) did a thorough analysis as did a DBSA team a few years later (Stilwell, 1985). Their work was analysed and will be reported extensively.

Various approaches and procedures were used. Quantitative analysis alone would result in an incomplete picture of what the project approach at Sheila entailed. As argued in chapter 4, quantitative data and its analysis can often result in a restricted view of the realities of rural life as it often fails to present the complexities of a specific livelihood (Chambers, 1991; Schönhuth & Kievelitz, 1994). Complementing qualitative methods are especially suited for gathering social and socio-economic information. Qualitative analysis therefore formed an important part of this study. A lack of quantitative data, especially for the last years of the project ('85-'94) when data was no longer captured by North West Co-operative, made qualitative analysis even more important.

Analysis started in 1997 with PLA-based inquiries in the Sheila area, with the objectives of building a relationship of trust and co-operation and developing insight. The co-operation of agricultural officials was sought and several PLA- based activities took place in order to get to know the area and its farmers. The reasons for the study were communicated and FSR-E-type demonstrations with crop-options were initiated. This PLA phase included preparation where literature and information was reviewed. This was followed by discussions with farmers on recent history as it relates to agriculture. During this exploration phase, trends, preferences etc., were determined to record the knowledge and activities of villagers. During the process errors in researcher-perceptions were revealed and a picture of what project livelihoods entailed gradually emerged. This contributed to a relationship with the farmers and an understanding of the people and the area. As described in the methodology chapter, these procedures circumvent a restricted vision of the realities of rural life and facilitate understanding. Communication was crucial and this methodology enabled farmers to become active collaborators in the analysis. This research methodology is valid for gathering social and socio-economic information; it focuses on attitude, eventually determining action.

The qualitative phase also enlightened the quantitative phase, as it facilitated the identification of the most important factors determining change. It facilitated the compilation of a quantitative questionnaire with focused questions. This could only commence once the area, its people and the agricultural problems were understood. Quantitative analysis was done through a survey to complement the information gathered through the literature and the qualitative process. A questionnaire was first tested with officials and farmers from the area, as well as with data analysts. A trained enumerator (which in 60 percent of cases was the analyst) asked the questions, and if not understood, explained them to the farmer. In this way the integrity of the data was enhanced. This process took several months. All the questionnaires were checked and prepared for analysis to again ensure integrity of the data. The questionnaire is included as Annexure Two.

The questionnaire used in this survey to quantify the farming system, was developed using as basis a questionnaire that was extensively used and tested previously. The ARC and the University of Pretoria used a similar typology-based questionnaire at various localities (D'Haese, 1997; Laurent, *et. al.*, 1999; D'Haese, *et. al.*, 1998; Van Rooyen, *et. al.*, 1998; Modiselle, 2001). In the first section information regarding land resources was requested in terms of the respondent's access to private, state, hired or tribal land. The size of and distance from this resource was also requested. As the qualitative phase revealed that sharecropping is very common, respondent's attitude towards rental contracts was asked. In section two household particulars were gathered. A description of the household, source of income, education of the farmer, expenses, transport and amenities was requested. Crop production data was gathered in section three. The farmer's skill-level was investigated through questions dealing with crop management aspects, inputs and output data was collected and labour requirements and constraints recorded. The same type of info was gathered for the animal enterprise, including type and herd size, reproduction and marketing data, as well as constraints. In the final sections data regarding on farm capital, support services and attitude with regard to the Sheila project was gathered.

Bembridge *et. al.* (1982), in the previous analysis of Sheila interviewed a total of 114 farmers, entailing a 20% sample size. This was perceived as considerably larger than other socio-economic studies at the time. According to a training manual compiled by the Universities of Pretoria and Ghent (Van Rooyen, *et. al., 2001),* a survey can be completed at the point where supplementary interviews result in the classification of that farm into an already existing farm type. This sampling process entailed a mixture of targeted and overall sampling, according to key persons' advice, and random route sampling (households added by chance). Although *"The larger the sample the better,* the balance between accuracy and practicalities (feasibility and manageability) was striven for. Whilst rural households differed according to a wide range of variables, typological techniques refer to a multi-variables analysis, rendering it complicated to determine accurately the sample size. Guidelines for human science studies suggest that for a population of ±1500, 20% of the population should be sampled. Beyond 5000, a population size is almost irrelevant and a sample size of 400 will be adequate. As for a satisfactory grouping phase, it is necessary to survey at least 80 to 100 households (Perret, 1999). The sample in this study interviewed 123 farmers in Sheila, Verdwaal and Springbokpan, entailing a larger than 20% sample size, sufficiently covering diversity.

### 6.1.3 The target population

The specific area investigated, are the villages of Sheila, Verdwaal and Springbokpan. Data from the national census of 1996 (www.statssa.org.za) describes the villages and the community profile: The population is exclusively African. Although the 1996 census statistics state that between 12 and 18% of households in Sheila and Verdwaal has access to electricity, this percentage has risen to around 75% since. Springbokpan is not yet electrified. Candles and paraffin lamps are the alternative source of lighting. Refuse disposal is through the use of a communal or own refuse dump. No formal service is available. The following tables further describe the dynamics and profiles of the villages concerned.

Table 6.1.1: Dwellings and water source of three Ditsobotla villages (www.statssa.org.za)

| | **Sheila** | **Springbokpan** | **Verdwaal** |
|---|---|---|---|
| House on separate stand | 217 | 361 | 106 |
| **Flat/room on shared stand** | 20 | 12 | 49 |
| **Informal dwelling** | 26 | 20 | 243 |
| **Total** | 263 | 393 | 398 |
| | | | |
| Piped water in dwelling | 47 | 0 | 12 |
| **Piped water on site** | 735 | 12 | 1 |
| Public tap | 577 | 0 | 1771 |
| **Tanker/borehole/well** | 31 | 2015 | 96 |
| **Total** | 1390 | 2027 | 1880 |

Housing in the area consists mostly of brick houses with corrugated iron roofs. Most households have a house on a separate stand, except for Verdwaal where a significant number of households live in informal dwellings, made predominantly of corrugated iron. Although only 3.4% of households in Sheila and 0.6% in Verdwaal have access to piped water in the house, water supply for the three villages is above average for the district, with Sheila and Verdwaal having access to either water on

site, or a public tap nearby. In Springbokpan, the water supply consists mainly of boreholes. A standard determined by the Department of Water Affairs and Forestry is standpipes at 200 metre radii. This is adhered to in the study area. In the Ditsobotla district, ±70% of people do not comply with this standard. However, Sheila, Verdwaal and Springbokpan do not fall on the priority list and are above average for the district. Regarding electricity, in Verdwaal 23.5% of households use a prepaid system while a mixture of prepaid and conventional electricity services are provided to 12.2% of households. Springbokpan is not yet electrified. Only 0.3% of households in Ditsobotla have sanitation in the form of septic tanks.

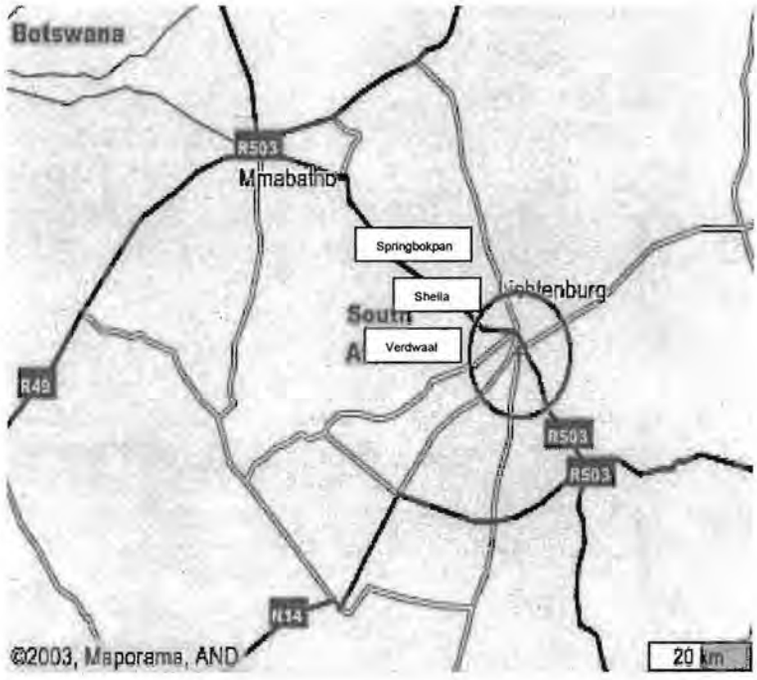



Figure 6.1.1: A map illustrating the location of Springbokpan, Sheila and Verdwaal, in relation to two major towns (Mmabatho and Lichtenburg) in the North West province. (See also Figure 5.2.1)

Table 6.1.2: Age distribution and education level in three Ditsobotla villages (www.statssa.org.za)

| | Sheila | Springbokpan | Verdwaal |
|---|---|---|---|
| **00 – 04 yr.** | 170 | 230 | 278 |
| **05 – 19 yr.** | 515 | 795 | 638 |
| **20 – 44 yr.** | 471 | 573 | 687 |
| **45 – 69 yr.** | 185 | 319 | 217 |
| **70 and above** | 36 | 68 | 47 |
| **Unspecified** | 13 | 42 | 13 |
| **Total** | 1390 | 2027 | 1880 |
| | | | |
| No schooling | 308 | 353 | 555 |
| **Grade 1 to 3** | 143 | 229 | 242 |
| Grade 4 to 7 | 393 | 565 | 475 |
| Grade 8 to 11 | 297 | 533 | 277 |
| **Matric only** | 52 | 75 | 33 |
| **Post Matric** | 2 | 8 | 1 |
| **Unspecified** | 25 | 35 | 19 |
| **NA: Aged <5** | 170 | 229 | 278 |
| **Total** | 1390 | 2027 | 1880 |

Table 6.1.3: Employment, occupation and individual annual household income of three villages in Ditsobotla (www.statssa.org.za)

| Employment: | Sheila | Springbokpan | Verdwaal |
|---|---|---|---|
| Employed | 103 | 151 | 145 |
| Unemployed | 351 | 523 | 473 |
| Housewife/home-maker | 53 | 95 | 350 |
| Scholar/full-time student | 186 | 286 | 103 |
| Pensioner/Disabled | 100 | 185 | 170 |
| None of the above | 60 | 75 | 36 |
| NA: Aged <15 | 537 | 712 | 603 |
| Total | 1390 | 2027 | 1880 |
| Occupation | Sheila | Springbokpan | Verdwaal |
| Official/manager/professional | 8 | 16 | 4 |
| Technician/Clerk/Services/Sales | 20 | 35 | 29 |
| Skilled agricultural workers | 2 | 4 | 19 |
| Crafts & trades workers | 13 | 21 | 49 |
| Plant/machine operators | 20 | 20 | 32 |
| Elementary occupations | 33 | 40 | 111 |
| Occupation unspecified | 1294 | 1891 | 1636 |
| Total | 1390 | 2027 | 1880 |
| Individual annual income | Sheila | Springbokpan | Verdwaal |
| None | 1194 | 1579 | 1546 |
| R1-2400 | 6 | 311 | 48 |
| R2401-6000 | 74 | 71 | 142 |
| R6001-18000 | 88 | 44 | 125 |
| R18001-42000 | 20 | 18 | 18 |
| >R42001 | 8 | 4 | 1 |
| Total | 1390 | 2027 | 1880 |

Obvious from table 6.1.2 is that the population is predominantly young, with almost half of the population younger than 20. More than half the population of the villages have none or a limited, primary school education. According to the data in table 6.1.3, only 9.6% of the total population of

these three villages has official employment. During the 1996 census, 84% of the population of Sheila, Verdwaal and Springbokpan reported no income. Nine percent reported income under R6000 p.a. and 7% an income of higher than R6000 p.a.

Income levels are generally low. However, judging from the general state of these villages, the number of remittances as well as the agricultural economic data indicated in the survey that will be discussed later, this is obviously an incomplete picture. As 26% are unemployed, this illustrates the relatively high number of the very young, students, pensioners and those informally occupied. Pensioners, of whom there are a significant number, get a regular income from the state (roughly R700 per month in 2003) and for many households this is the only regular and predictable source of income. It is however obvious that unemployment is a serious problem.

Regarding gender, 47 to 48 percent of the population of all three villages is male, with the rest female. The extent of unemployment is clearly illustrated by the table above. There are very few skilled workers in the villages and especially the low number of skilled agricultural workers is significant.

## 6.2 Direct project impact

### 6.2.1 Institutional impact

#### 6.2.1.1 Strategy:

When the Department of Agriculture of Bophuthatswana was established in 1976, the official view was that large-scale, modern projects were a short-term solution to facilitating food self-sufficiency. The development strategy of the Department of Agriculture at the time was based upon a dual approach. This firstly comprised large-scale, capital intensive and profit oriented agricultural production, seen as a short to medium term measure run almost exclusively by capital and expertise brought from outside the project area. Secondly, it focused on relatively small-scale, labour intensive farming, based on the traditional communal system and community development. In contrast, Agricor and the CED subsequently viewed the Ditsobotla scheme as a long-term development vehicle, including social development. Agricor's strategy was to initially concentrate on production, supposedly followed by development of human potential, i.e. integrated rural development.

When the Sheila project commenced in 1976/77 on roughly 3500 ha of state land, shared by 196 landowners, the original view of a short-term goal was clearly evident as illustrated by the fact that the land was actually worked by only 31 mechanisation contractors. Of these contractors, 80% employed their own tractor drivers. A substantial Human Capacity Development programme did not in practice complement Agricor's focus on production. Despite project objectives such as development of natural and human resources and self-sustaining communities, target farm-income soon became the sole objective, leading to increased management control. This was partly the result of the original project objectives being broad, with the priority being maize production. The other key objective, namely establishing independent farmers, was difficult to achieve, seen in the light of the strategy and political pressure to produce maize. When evaluated with the design criteria established in chapter two, the strategy was only partially sound, as only co-ordination, linkages, cost saving and value adding were attempted to an extent. Participation and Human Capacity Development were striven for in theory, although this did not always feature in practice. The diversity in the community, sustainability and the social realities were also not recognised at the time as important planning parameters. A philosophical argument on what is supposed to come first - development or participation (Cohen & Uphoff, 1975) is also relevant. It was established by Bembridge *et. al.* (1982), that prior participation in future project establishment phases would greatly enhance production and development. It is argued that certain conditions must be met before development can be successful at grass-roots level. This includes meaningful, productive participation. This was not sufficiently addressed at Sheila.

#### 6.2.1.2 Organisation:

The project was built on a modification of the Israeli Moshav system; centred on a production co-operative electing its own management committee, with agricultural production through a contractor

system (Bembridge *et. al.*, 1982). This approach of co-operative management and central provision of services to individual holdings effectively combined state, private and co-operative capital in financing and management of a contract farming system. In terms of the developed design criteria, the criteria of optimal linkages were fulfilled. Initially NWC assisted departmental extension with management and financing. Agricor, when established in 1978, commissioned the NWC to continue as managerial agents, until 1985, when management was relegated to Agricor (Francis, 1999).

When the weaknesses of the project became apparent, particularly with regard to limited participation and low production levels, a proposal for estate type farming by Agricor on behalf of farmers, to optimise yields and recover debt, was considered. This illustrates the considerable political pressure to 'show successes'. Alternatively the DBSA proposed more farmer decision-making, less intensive (and costly) production methods, larger individual land holdings and lower yield targets to lower risk, enhanced viability and increased participation. The rationale of the DBSA was that the high target yields aimed for caused high input costs, higher risk and lower net farm incomes. Ironically the primary co-operative remained successful throughout, as a result of the continuous turnover in inputs provided to farmers. In contradiction, interest on loans seriously limited the profitability of farmer enterprises, especially in drier seasons. As it became obvious that the contractor system was not viable, more of the responsibilities were taken over by officials and eventually the primary co-operative rendered basically all services.

During 1991/92 a comprehensive re-planning phase took place to enhance independence and promote farmer involvement and economically viable resource utilisation. For this purpose the so-called leader farmer system was implemented. Major restructuring of technical and institutional strategies was complemented with major debt write-off. Committee members were hence paid a salary, as were security guards, appointed from the local community to safeguard crops. To qualify a farmer had to work 75 ha, obtainable through sharecropping agreements. To enhance participation, all the debt of the leader farmer and his consolidated land was written off over 10 years, provided that the landowners stayed in the re-planned programme. No interest was to be raised. The re-planning aimed to shift the responsibility for production to the landowners and to encourage economic utilisation and viability through sharecropping. Mechanisation equipment still belonged to the co-operative but the leader farmers could apply for loans and buy this equipment at 'near-market related' values. Written contracts between the leader farmers, the landowners and Agribank were required and were drawn up by the project management. Agribank was the credit parastatal closely linked to Agricor and most often worked with Agricor in Bophuthatswana's development projects. Rental was determined by the participants and could be in either cash or bags of maize. The harvest was security for a production loan and the equipment was the collateral for the mechanisation loan. When an application was viewed as a 'high-risk' proposition, the Agricultural Department guaranteed these loans. In its turn, Agribank provided conditions for loans, processed applications and provided statements guaranteeing debt write-off. Those unwilling to partake could remain in the project, where Agricor continued to produce on behalf of landowners. Agricor and the co-operative facilitated implementation of the new scheme by explaining it, identifying leader farmers and grouping these with their lessees. Agricor also assisted with mechanisation, loan arrangements, maintained the records and monitored programmes and debt schedules. The Department of Agriculture made budgetary provisions and

provided Agribank with guarantees securing loans. This dual system persisted until early 1994 when Agribank liquidated the co-operative. While the general reason for this was apparently the uneconomic running of the co-operative and project, the specific reasons were not explained. During the political upheaval that took place during March and April of 1994 most assets and records of the primary co-operative disappeared and it was permanently closed.

The design criteria that were obviously not dealt with in the organisation of the project, include participation, co-ordination and diversity. The 'political impact' that demanded high production, detrimentally influenced these aspects. Technical changes also failed to account for social realities, while no research activities were structured. It was also not recognised that for most of the population, agriculture was one of various livelihood strategies, resulting in limited commitment to the project.

#### 6.2.1.3 Support services

As indicated by the strategy, comprehensive support was available. Initially NWC seconded various managers (general, workshop, financial and field managers) to provide technical, administrative and financial assistance and infrastructure. Later two departmental Tswana section managers employed by Agricor were posted to the project with duties to advise and liaise with farmers. Agricor later commissioned NWC to continue as managerial agents for the project until 1985, after which Agricor was solely responsible for project management (Bembridge *et. al.*, 1982).

##### 6.2.1.3.1 Extension, training and access to information:

Although there was an initial emphasis on training specifically, this was, according to previous analyses, mostly sporadic and insufficient. *Ad hoc* training with little recognition of the participants' level of education was delivered at random. No Human Capacity Development programme was evident, resulting in limited participation. In general, technical knowledge was found to be poor during evaluations (Bembridge *et. al.*, 1982; Stilwell, 1985). Research and demonstration activities were scarce. According to the DBSA report (Stilwell, 1985), there was a training programme for committee members, dealing with the role and function of the committees. Participating farmers also received sporadic training in various aspects of cultivation.

During the 1991/92 replanning, extensionists worked with project committees in an extensive training program. Tractor drivers received several 'refresher' courses, including literacy courses and extensive training in crop production. However, farmers when specifically asked during analysis, generally did not view training as an important advantage of the project. Despite this, a lack of HCD was recognised as a major constraint during evaluations, as managerial aptitude is the most important ingredient in farming efficiency (Bembridge *et. al.*, 1982; Stilwell, 1985). At some stage the Lichtenburg Agricultural Union established an advice committee to support Sheila farmers. This concept apparently never progressed further than the original idea as no record could be found of any such activities.

6.2.1.3.2 Input supply and mechanisation services

Initially NWC provided services from its Lichtenburg office, but a primary co-operative for the Sheila ward, was officially established in 1981/'82 with 400 'farmers' or landowners, of which 19 were actual contractors. Since its inception, membership of the co-operative, that also provided a retail service, was open to all farmers in the area. Production inputs, tractors, parts etc., were supplied on credit through the NWC, and then channelled through the primary co-operative. Contractors also received loans for tractors, equipment and fuel. During 1985 loans to the value of R6.6 million were granted and the co-operative had cash to the value of R5 million. Although the mechanisation equipment officially belonged to the co-operative, it was given on loan to the selected contractors.

The co-operative approach was extensively used in Bophuthatswana as part of the provision of decentralised services. Co-operatives later developed into local organisations that co-ordinated the organised farming community and offered support. By the early 1990s serious problems were evident at most co-operatives. Some of the conclusions drawn in internal memos were that local management and initiative, vital for success, were mostly missing. Generally financial statements were 2 to 3 years in arrears and sound financial management was the exception and not the rule. Co-operatives were often seen as subsidised retail shops and often did not carry agricultural supplies. Only 10% of all transactions could be directly associated with Agriculture. A lack of demand for agricultural supplies was eventually evident, resultant from a lack of commercial agricultural activity. Design criteria obviously lacking in service provision were proper co-ordination, linkages and participation. With more effective linkages, substantial cost saving could have been achieved. Again technological consideration did not match social realities.

**6.2.1.4 Project management procedures:**

6.2.1.4.1 Participation:

Participant selection was to a large extent determined or at least influenced by the traditional authorities. Farming ability and potential did not play a significant role in this process, although most contractors had some mechanisation experience. Selected contractors and a substantial number of officials eventually did most of the actual farming, with up to 70% of the land right holders being migrants, working elsewhere. Although there were early attempts to involve farmers in decision-making, by the mid-1980s farmer involvement was extremely limited and centralised management was running the operation almost totally. As the political pressure to perform increased, the need to produce lessened management's enthusiasm to train. Whilst production was dealt with by management, farmers in general were not motivated to extend themselves. Effectively, from the inception of the projects, the majority of the previously active land right-holders ceased to farm, while those that continued, were subject to intrusive and often authoritarian management practices. This contributed to the farmers becoming suspicious of state institutions and reluctant to commit resources to development projects (Francis, 1998). Only 6-10% of landowners were involved in the project at any stage, and then mostly as employees, i.e. drivers, mechanics, foremen, secretaries or watchmen.

Key informants and previous analyses concluded that landowners (who in fact only had access to state allotted land) were to a large extent not involved in the agricultural activities. The rigid income targets determined by Agricor contributed to central control and less farmer involvement. The importance of participation is illustrated by the significant correlation between yield and participation as determined by Bembridge *et. al.*, (1982). It was clear that the few farmers, who took an active part in the project, were significantly more successful. In general however, a limited emphasis on training and HCD was evident and little participation took place.

6.2.1.4.2 Tenure and land allocation:

All participants were allocated 15 hectares arable state land and contractors 30 ha each. The size of holdings was not determined by any feasibility analysis. The land available for the project was simply divided by the number of potential participants. Contractors were allocated an average of 130 ha to work, including their own lands. However, lands at Sheila were most often cultivated as a unit with cost division and profits calculated in the office. By 1985 roughly 80% of the farmers involved favoured (and practised) sharecropping. This meant that an innovative farmer utilised his allocated land and those of other landowners, and provided the 'land owner' with a share of the yield.

Agricor proposed project adaptations during the early eighties, including a demonstration farm, stricter farmer selection and larger (45ha) units. Also on the agenda was intensive community development and training. However, consolidating farm units was fraught with problems and these proposals were never realised. The socialistic nature of the project with agriculture practised on behalf of farmers, gave rise to unrealistic expectations. Although many suggestions were made when farmers were asked during 1985 how the system could be improved, 80% indicated that they favoured the prevailing system where Agricor farmed on 'their' land for a share of the yield. In contradiction, many suggestions centred on participation and communication, including clearly marked plots, quicker credit, less input use, etc. (Stilwell, 1985).

The project scale was a key variable and economies of scale played an extensive role in the project. Costs saving aspects of economies of scale were not recognised. Roodt (1983) described an interesting perspective on the farm model and the land issue: during the early 1980s, Sheila occupied state land comprising 6500 ha and accommodating 429 farmers. Given a realistic 10-year climatic cycle developed in consultation with experienced farmers in the area, a series of probabilities were designed (Roodt, 1983). A climatic cycle representing one complete crop failure, four 'low to average' production years, three 'good' and two 'excellent' years was put forward as a realistic model. This is represented by maize production figures of zero, 0.5 to 1.5t/ha, 2-3 t/ha and 3.5-4t/ha respectively. This coincides with average yield data for the area. A gross average income based on a 1983 price of R135/ton leads to a gross average income of R4961 (for 15 ha) and a net earning of R730 (Roodt, 1983). At the time a per annum income of R5000 was the amount identified for a livelihood from agriculture. Although roughly 80% of the Bophuthatswana population of 1.01 million did not earn this, a Sheila farmer would require almost 103 ha to obtain such a livelihood. Not only is 15 ha totally insufficient, but it is also likely to cause increased debt (Roodt, 1983). Effectively 100ha units mean

that approximately 2000 crop-farming families could be accommodated in Ditsobotla. Given a capacity for the district of 27 000 livestock units, another 100 cattle farming families should be able to make a living from agriculture. A total of 2100 farmer households can therefore conceivably find a rural livelihood, leaving 14 000 rural households that will have to find income elsewhere (Roodt, 1983). Stilwell (1985), indicating that agriculture could only accommodate 15% of the households of Ditsobotla, confirms this finding. Highlighting the limitations for small-scale agriculture is that Ditsobotla has high potential arable land and was seen as the breadbasket of Bophuthatswana (Roodt, 1983). This again illustrates the disparity between social reality, political aspirations and technology options. A redesigned project approach, dealing particularly with transaction costs and providing for a participative planning process for different types in a typology, could address this serious issue.

6.2.1.4.3 Responsibilities of management and the farmers' committee:

A committee or Board of Directors (representing the seven participating villages) was responsible for liaison and 'decision-making'. This committee of seven members (one per village) was elected annually and although some were re-elected, changes were common. Committee members were paid a salary. Although committee members were generally not very well educated, they had status in their particular villages. The committee received training regarding the functioning of an effective committee and members were also exposed to commercial agriculture. In general stakeholders interviewed recently, perceived inputs from the committee into project management as very limited. The perception of many locals was that project management largely manipulated the committee. Ironically when individuals from the villages questioned decisions and actions of project management, committee members sided with management and did not support these concerns. Participants also had a preference with regard to the manager of the project. While most participants were largely satisfied with one long-time manager, his replacement was unpopular and allegations of mismanagement and corruption were made. The DBSA study (Stilwell, 1985), established that despite objectives such as natural and human resource development and self sustaining communities, income targets lead to more management control. Also resulting were more absentee farmers and limited contribution and participation of the committees.

In theory, management 'arranged' ploughing but all other cultivation was the contractor's responsibility. In practice, substantial support and guidance was provided during all cultivation and maintenance practices. Implements and tractors provided through management were used freely outside the project but maintenance was the responsibility of project management. A blanket package of inputs was generally applied and in general individual management practices caused most yield variation. With the exception of weed control, all cultivation and maintenance practices were effectively performed by the contractor and supervised by the project management. The majority of participants abstained from maintenance practices. Although in theory the design criteria of co-ordination, linkages and participation were recognised, in practice political pressure determined the direction of the project.

6.2.1.4.4 Linkages:

During key interviews, former project employees and managers named insufficient linkage and communication between stakeholders as a major constraint. Contractors did communicate with extension and management, while most other participants were generally uninformed. The ARDRI team (Bembridge *et. al.*, 1982) established that almost half (47%) the participants were unaware of Agricor's existence during the early 1980s, indicating the lack of linkage and communication. At this time Agricor's image was poor with 60% of respondents. Ordinary participants had contact with extension officers less than once in two years. Almost two thirds (65%) of participants complained of limited consultation. For many participants their contact with management entailed the collection of a cheque and a financial statement once a year from the project offices. Often these statements reflected raised input costs, not discussed even with the more active participants, mostly contractors. These statements only indicated a net cash value of the harvest, without any breakdown. Roughly 60% of contractors did not understand these financial statements and most had little technical understanding. The DBSA evaluation found that further criticism related mainly to late payments and mistrust in the production figures given by management (Stilwell, 1985). However, only a few farmers were aware of their precise yield in either bags or tons per hectare. The majority described loads (wagonloads) with an unknown capacity without consideration of transport cost. Linkages, communication and record keeping was sub optimal and access to specialists (who in theory were available), demonstrations and the primary co-operative was generally poor. Liaison with the committee was also not optimal.

### 6.2.1.5 Enabling environment:

Various infrastructural adaptations of the physical environment took place to facilitate project implementation. A tar road linking the main Mafikeng-Lichtenburg route to the primary cooperative at Sheila, management offices and the villages of Sheila, Verdwaal and Springbokpan to Itsoseng and other villages in a westerly direction originate from project initiation. Comprehensive infrastructure in terms of buildings was erected. Other access roads to lands and extension offices were maintained. Eventually each village had an extension officer and an administrative office from which activities were coordinated. The main complex at Sheila consisted of various offices, a primary cooperative with a fuel depot and various buildings with supplies. Extensive training facilities were also erected together with living quarters for the various employees. The layout of the lands as well as fencing of these lands was also done. Extensive mechanical and other equipment was also made available.

## 6.2.2 Implementation effectiveness analysis: an ex *post* LFA of the Sheila project

As described in chapter four, LFA is a planning tool providing a structured format for specifying the components of an intervention, and the logical linkages between a set of means and a set of ends. It serves as a tool for defining inputs, timetables, assumptions for success, outputs and measurable indicators for monitoring and evaluating performance.

Using the before-project scenario as described by Seobi (1980), Redelinghuys (1981) and Bembridge *et. al.* (1982), constraints as experienced by the agricultural community at Sheila are described in a 'problem tree' as the first part of the LFA-process.

In summary, during the late 1970s, land holdings were generally smaller than 5ha and less than two thirds of all land right holders cultivated, due to a lack of capital, limited credit facilities and debt. Sharecropping was extensively used and access to services was a major limitation. Yields of 500 kg/ha were achieved on average. Less than half the farmers bought inputs and then at very low rates. Most farmers lived below the poverty line. Technology adoption rates were low and farming units small to the extent that they were not viable. This scenario is graphically illustrated in the 'problem tree' in figure 6.2.1:

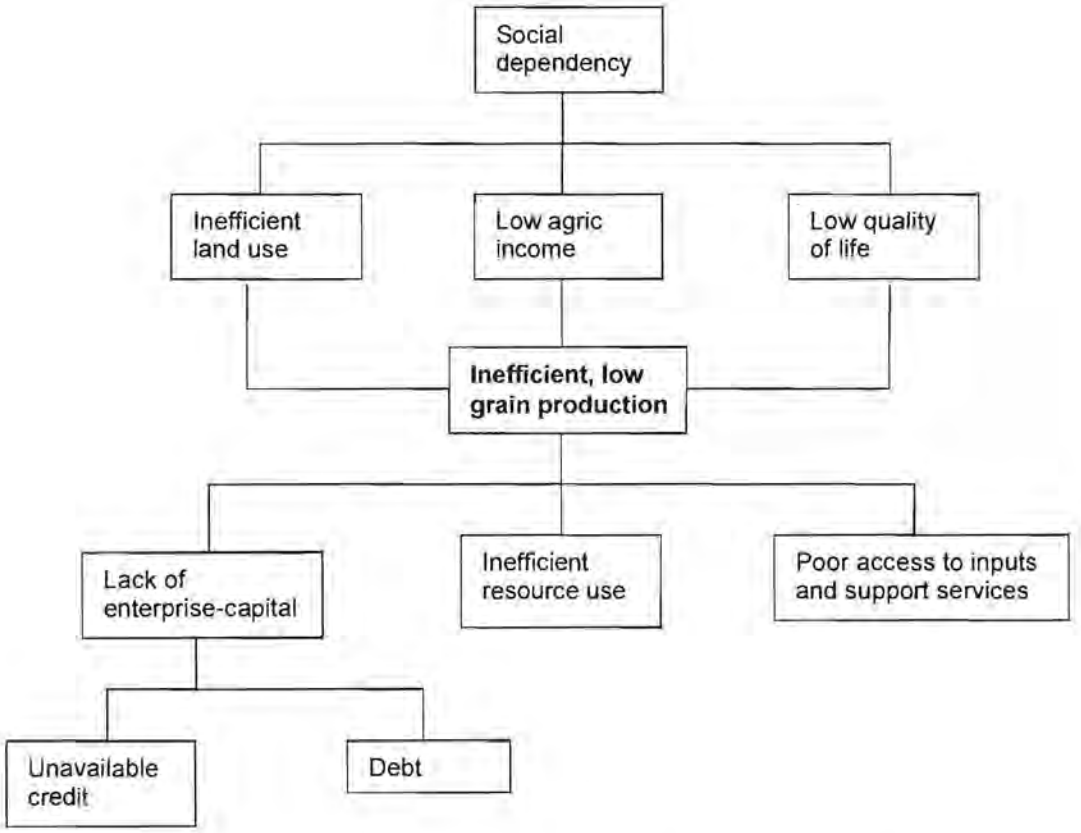



Figure 6.2.1: A 'problem tree' illustrating constraints in agriculture at Shiela before project initiation.

As the subsequent phase of the LFA, an objectives analysis is carried out; formulating the negative states in the problem tree, into positive states achieved in the future. This is illustrated in figure 6.2.2:

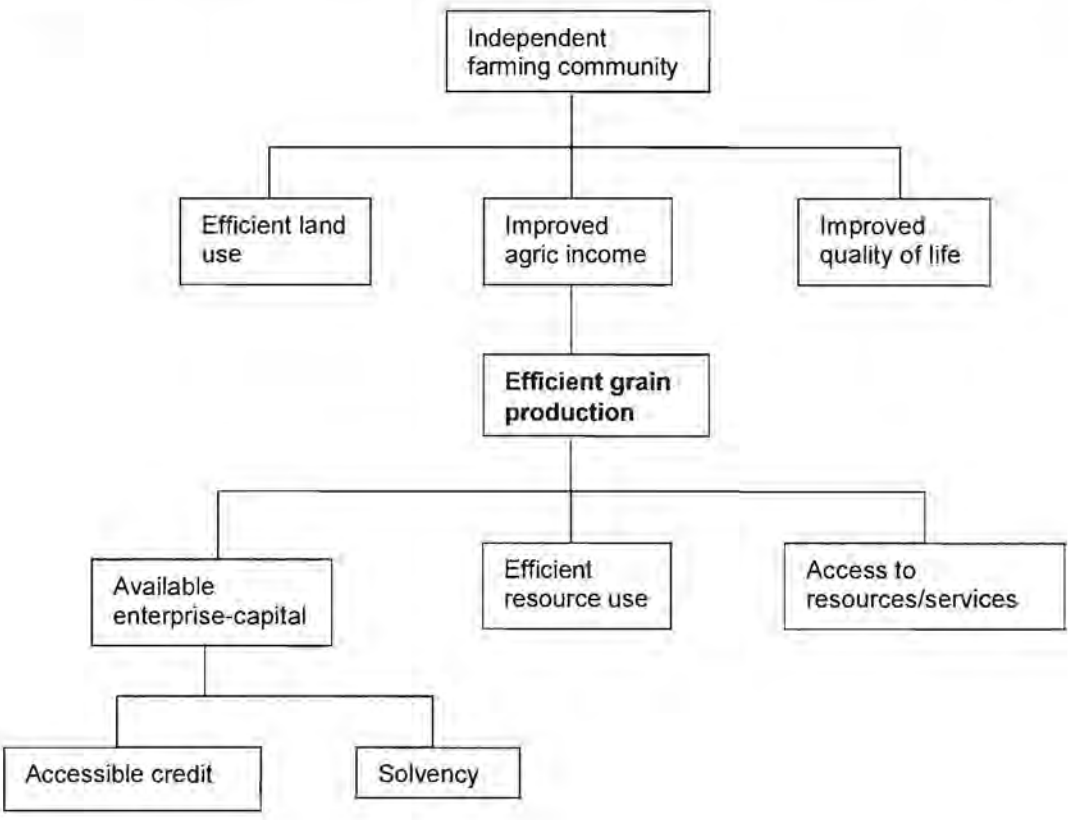



Figure 6.2.2: An 'objective tree' illustrating possible solutions for agriculture at the Shiela project.

How to achieve the objectives graphically illustrated in figure 6.2.2 is dealt with in the next step of the LFA, called a strategy analysis, in which specific 'intervention strategies are identified. This is evaluated at the Shiela project, which entailed an elaborate intervention.

The project's main aim was to increase grain and specifically maize production by integration of farmers and stakeholders (NWC, Agricor, and Farmers' committee) into a capital-intensive cropping enterprise. It was initiated during the late 1970s on roughly 4000 hectares. The objectives held in improved utilisation of high potential land for maize production, selection and training of contractors, increased efficiency and the formation of primary co-operatives. The long-term goal was to develop agricultural potential and improve living standards. A comparison of goals with potential achievements describes the rationale beyond the Sheila project. Implementation effectiveness was therefore determined through the final phase of the logical framework analysis, i.e. the matrix illustrated in table 6.2.1. It indicates why and how the project was carried out, where the data required was to be obtained and which assumptions were made. It places the project in the larger framework of constraints and goals as well as the development context.

Table 6.2.1: Logical framework: Comparing goals & achievements of Sheila project: 1977-1994

| | INTERVENTION LOGIC | OBJECTIVELY VERIFIABLE INDICATORS (OVI) | VERIFICATION SOURCES | ASSUMPTIONS (External factors) |
|---|---|---|---|---|
| **Goal** | Improved agric production & quality of life | Household income, health, housing employment. | Annual Agricor reports, ARDRI report, CSS statistics, publications | |
| **Purpose** | Efficient grain production | Yield statistics, input quantities, crop income | Production records (NWC), Agricor reports | Sustained commitment, profit and HCD |
| **Intermediate result** | Increased self-sufficiency | Farmer no's, records, yields, farmer profile | NWC production records, Agricor reports, publications | Normal climatic cycles and positive input/output price relation |
| **Intermediate result** | Efficient, sustainable land utilisation | B-C ratios, lands planted, cultivation practices, yields | CBA, survey, production records (NWC), reports, expert interviews | Commitment & capacity of selected participants |
| **Intermediate result** | Increased profit | B-C ratios, Net farm profit, profit margin. | CBA, surveys, Agricor reports | Skills & technology sustainably transferred |
| **Activity 1** | Organised service provision through NWC management + EOs | Participation, maintenance & yield records, net project profit | Minutes & attendance figures, key informant interviews, ADRI & DBSA reports & publications | Skilled & committed stakeholders & effective co-operation |
| **Activity 2** | Enhanced participation & linkages through farmer' committees & HCD | Meeting minutes, issues raised, status, activities, farmer #'s | Membership no's, minutes, attendance, key interviews, ADRI & DBSA reports & publications | Functional & accepted committee, sound communication & training |
| **Activity 3** | Input, equipment, credit, & services provision | Inputs & equipment handled, loans granted & services rendered | Progress reports, minutes, NWC financial records, key interviews | Effective and efficient delivery of services & resources |
| | | Inputs/Resources: Capital, infrastructure, personnel, tribal authorities, and farmers. | | Prior conditions: Participant and stakeholders interest in model, funding available |

The Objectively Verifiable Indicators (OVI) in terms of the goal focuses on household income, health status, housing and employment, which did initially improve as a result of the project. Regarding the purpose - input utilisation increased as did maize yields and subsequent crop income. However, although the number of farmers did increase in theory, in practice, project management acted on behalf of the beneficiaries. Regarding the intermediate results, self-sufficiency was not achieved. A farmer profile was established in the analysis done by Bembridge *et. al.* (1982), and to a lesser extent by Stilwell (1985), but project management was never adapted as a result of this. Other OVI dealing with participation and linkages would include records of meetings, linkages, training activities, active farmer numbers, etc. This aspect did not receive enough attention and records of such activities were scarce. In terms of linkages, records of extensive input transactions, loans granted, equipment usage and services rendered were recorded, but this was mostly handled by project management. A critical comparison with the project design criteria illustrates that the OVI did not sufficiently reconcile technical aspects with social realities: the early stage of development was not accounted for and most beneficiaries were unable to adapt the technology and management procedures used in the project. Diversity within the community was also not recognised or dealt with. Although linkages and co-ordination was facilitated and structured, this was not optimally utilised to enhance communication and empowerment. With regard to skills development, participation and social and economic sustainability, limited attention in the OVI and records of related activities are found.

Production improved under project management, especially during the first decade of the project. Surplus production led to significant increases in agricultural income and standard of living. However, very little empowerment rendering of farmers took place (Bembridge et. al., 1982). Although the top farmers did well and non-participants were also positively influenced through spin-offs, the majority lagged behind, due to a lack of commitment and training. While input providers and specifically the North West Co-operative benefited significantly in terms of increased trade, equitable distribution of benefits was not achieved. In spite of the apparent lack in real training, a number of farmers did learn various skills and cultivation practises during the years of the project. The majority of farmers indicated satisfaction with the project.

In financial and economic terms, the first five years of the project were successful as illustrated by benefit cost ratios of roughly 1.35 (Bembridge et. al., 1982). Average profits were impressive. However, individual participants achieved large variation in yield and profit. Although average net farm profit increased significantly over the first few years as skills and input usage increased, only the top third compared commercially, while the rest compared poorly with non-agricultural income groups. This is a clear indication that the hypothesis of recognition and dealing with diversity is accurate. Liaison and participation was poor (Stilwell, 1985). According to key informants, political pressure originating from Mmabatho was intense. Although the basic project concept was sound, paternalism, poor communication and lack of empowerment inhibited development. Bophuthatswana never resolved the conflict between its commitment to maximise output and its supposed wish to establish a spectrum of farmers. According to key informants, the project was partially successful, but poor selection of participants, the tenure system, lack of participation and decision-making inhibited performance and sustainability (Strauss, personal communication; Francis, 1999).

The high target yields aimed for caused high input costs and higher risk. The project eventually left many participants in debt and compromised people's access to land. Attempts to find alternative income for those displaced, through dairy, poultry and rabbit projects were largely ineffectual (Francis, 1999). According to the ARDRI report, pareto optimality, the difficult to achieve the point on a social welfare function where improvement in the welfare of one group does not lead to diminishing welfare of another (Van Rooyen, 1983), was not achieved. The main aim, to develop arable potential and self-sufficiency was achieved temporarily, for a limited number of participants and at extensive public cost.

In terms of the project design criteria, technological aspects of the project did not account for the social development stage of the community, economic diversity between farmers was not recognised, linkages were not effective in dealing with these problems and there was limited emphasis on participation and empowerment. Poor participant selection influenced by political favouritism, political pressure leading to excessive management control and extensive subsidisation eventually caused the downfall of the project. Especially the lack of empowerment eventually made the initially impressive project non-sustainable. The approach was unable to establish a range of farmers and instead left many in debt, compromised land access and enhanced class differences. The project was discontinued in 1994 as Agribank forced closure of the co-operative due to financial difficulties.

### 6.2.3 Social impact

This type of impact can also be described as people-level impact. It includes the direct impacts on the people 'on the ground', i.e. project participants, non-participants and the community at large. Primary data pertaining to socio-economic profile, agricultural production and marketing was collected by means of various qualitative and quantitative approaches. A reconnaissance survey and meetings with farmers, officials and other role-players, as well as interviews with key informants formed part of the qualitative phase. An elaborate participatory appraisal process of three years illuminated local dynamics. A quantitative survey could consequently be attempted with confidence and a structured questionnaire took place during 1999-2000, in order to define distinctive farmer groups or types. This finally led to the construction of a typology and its refinement from all gathered data and the participative LFA analysis.

#### 6.2.3.1 Statistical analysis to describe diversity and determine a typology

With the quantitative survey, data regarding a total of 128 variables was recorded, from interviews with 123 respondents. Although this sample comprises roughly 60% of all the agriculturally active people in Sheila and Verdwaal, as well as roughly half those from Springbokpan, given the large number of variables and the inherent variation in the diverse community, statistical analysis was required. Three programmes were used for the statistical analysis of these data: SAS, Statistica and SPSS (Statistical Package for Social Science).

An initial descriptive statistical analysis was carried out to determine frequencies for categorical data and means for the metric data. Also determined was the standard deviation, as indication of variation. A main impression was that variation was relatively high with coefficients of variation between 40 and 100 and even higher for some variables. These results were used in the descriptive phase, elaborated upon extensively in the socio-economic evaluation (6.2.3.2).

For the next level analysis, a number of variables perceived as determining farmer type were pragmatically isolated from the initial 128, for the period 1997/98 and 1998/99. These variables quantified the household, resource available to the household and agricultural performance. They included land available for cropping; land planted and sharecropped during these seasons; mechanisation hired; education of the household head, household spending on food, transport, electricity, savings, loans and leisure; household size; numbers of income entering the household; inputs in terms of kilograms of fertiliser and seed bought; resulting yields for maize and sunflower; livestock income; investment in feed and medicine; mechanisation available and livestock numbers.

Data for certain variables were also combined into new variables to increase clarity, reduce variation and facilitate analysis. The amounts recorded for the seven variables dealing with spending were added to obtain one amount called 'household spending'. This figure on its own has limited meaning, but is ideal for the purpose of comparison in the typological analysis. Regarding the livestock enterprise, 39 variables described herd composition, mortality and reproduction were recorded and are

dealt with in the socio-economic evaluation (6.2.3.2). For the purposes of determining a typology however, only one new variable was used; the sum of all types of livestock. Another compilation is the calculated average hectares planted for the years analysed, while all inputs (seed and fertiliser) were simply added up to derive the combined variable: 'input-kilograms'. This figure again has no direct meaning, but is useful for the typological analysis. For the same purpose the average yields for sunflower and maize were determined and then added into one variable. Furthermore, due to the high variation in and non-normality of the data, land size, input and yield variables had to be transformed (log transformation) to facilitate sound analysis. .

The next logical step was a multivariate analysis. Factor analysis was used as a dimension-reducing technique to identify the variables that had the largest impact (eigenvalues) on variance, and largest physical meaning. Variables, representing socio-economic aspects (education, household size, incomes, spending) resource access (land available and planted, inputs and mechanisation), and performance (yields, stock number) to be used as indicators, were isolated.

A PCA (principal component analysis) was subsequently done on these variables to group farmers according to the first two principal components. These components can be viewed as independent, weighted average values for the variables, thus facilitating the determination of different types of the proposed typology. Figure 6.2.11 in the following section provides a graphical representation of the first two principal components (PCs). The first two PCs explained roughly half the total variation in the variables. The third PC did not contribute meaningfully to the explanation of the resulting groups and no further PCs were done. From the first two PC scores and the position of farmers (cases) in figure 6.2.11, four typological groups were identified pragmatically, by comparing farmer averages for the indicator variables, with their position on the graph. This process was informed by the long term engagement with the community, spatial distribution on the graph and the mentioned quantitative values per farmer. These groups were then tested, as indicated in figure 6.2.3; a box and whisker plot on Principal Component 1. It indicates median values of –1.33 for group 1; -0.41 for group 2; 0.62 for group 3 and 1.88 for group 4, respectively. It also indicates that the groups satisfy the demand for normality. This figure represents a preliminary identification of groups, before verification:

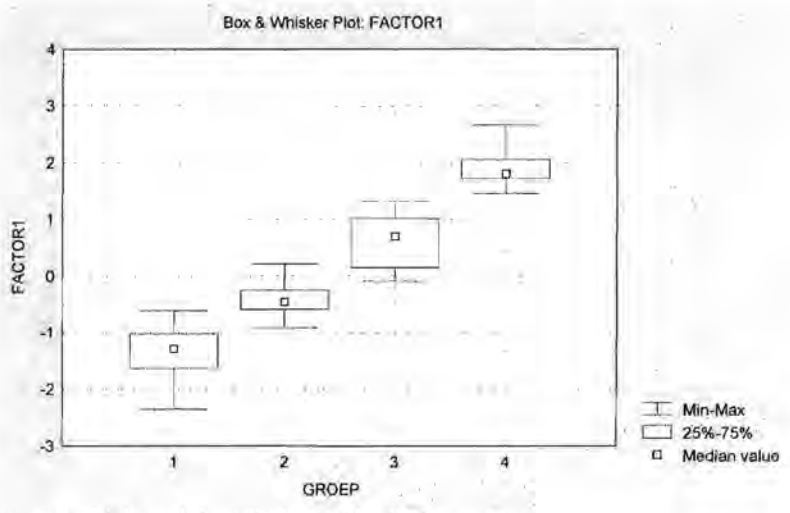



Figure 6.2.3: A box and whisker plot preliminary identifying groups

The next step was a discriminant analysis, used firstly to test the ability of the variables used as indicators to explain the differences between groups. Secondly, it was used to determine the validity of the grouping. A classification function for each group was also developed, in order to facilitate the description of a model for typology formulation.

Table 6.2.2: A stepwise discriminant analysis, to identify the most significant variables.

| Step | Entered | Partial R-square | F value | F probability |
|---|---|---|---|---|
| 1 | Ha-used | 0.811 | 161.22 | <.0001 |
| 2 | Tractors | 0.376 | 22.49 | <.0001 |
| 3 | Yield sum | 0.256 | 12.75 | <.0001 |
| 4 | Land size | 0.250 | 12.23 | <.0001 |
| 5 | Hiredmec. | 0.159 | 6.85 | 0.0003 |
| 6 | Input kg | 0.093 | 3.70 | 0.014 |
| 7 | Income # | 0.068 | 2.62 | 0.055 |
| 8 | Education | 0.102 | 4.02 | 0.009 |

**Classification function:**

Group 1: $y_1 =$ -48.8 + 10.55log(Ha-used) + 6.43(tractors) – 7.7log(yieldsum) + 17.84log(landsize) + 16.22(hiredmec: 1 if yes, 2 if no) – 0.15log(inputkg) + 6.45(income) + 5.19(education)

Group 2: $y_2 =$ -56.6 + 25.94log(Ha-used) + 6.64(tractors) – 0.03log(yieldsum) + 11.66log(landsize) + 15.84(hiredmec:1 if yes, 2 if no) + 1.21log(inputkg) + 6.97(income) + 4.93(education)

Group 3: $y_3 =$ -70.94 + 27.57log(Ha-used) + 8.22(tractors) + 9.72log(yieldsum) + 18.04log(landsize) + 12.21(hiredmec: 1 if yes, 2 if no) + 1.54log(inputkg) + 8.20(income) + 5.76(education)

Group 4: $y_4 =$ -111.58 + 31.88log(Ha-used) + 10.52(tractors) + 18.57log(yieldsum) + 27.01log(landsize) + 11.64(hiredmec: 1 if yes, 2 if no) + 1.47log(inputkg) + 10.13(income) + 7.57(education)

Whilst regression analysis requires independence between variables, multivariate analysis was developed specifically to deal with highly correlated variables such as the original variables. The components or classification functions ($Y_1$ to $Y_4$) determined through multivariate analysis are however independent, as is established in the subsequent analysis. A particular farmer's data could subsequently be used in this classification model. The highest value is an indication of the group in which the farmer would fit. For instance; if $y_3$ is the highest value obtained, the farmer would be allocated to group 3.

Using these classification functions on each of the 123 respondents, they can be classified back into the groups in order to establish the validity of the typological model. As seen in table 6.2.3, farmers were 78, 96, 84 and 100% correctly placed into groups 1 to 4 respectively.

Table 6.2.3: Number of Observations and percent classified into groups:

| From group | 1 | 2 | 3 | 4 | Total |
|---|---|---|---|---|---|
| # from 1 | 18 | 5 | 0 | 0 | 23 |
| % from 1 | **78.26** | 21.74 | 0.00 | 0.00 | 100.00% |
| # from 2 | 0 | 44 | 2 | 0 | 46 |
| % from 2 | 0.00 | **95.65** | 4.35 | 0.00 | 100.00 |
| # from 3 | 0 | 4 | 36 | 3 | 43 |
| % from 3 | 0.00 | 9.30 | **83.72** | 6.98 | 100.00 |
| # from 4 | 0 | 0 | 0 | 11 | 11 |
| % from 4 | 0.00 | 0.00 | 0.00 | **100.00** | 100.00 |
| Total | 18 | 53 | 38 | 14 | 123 |
| % | 14.63 | 43.09 | 30.89 | 11.38 | 100.00 |

Subsequently a one-way analysis of variance (ANOVA) was done on the first PC scores to determine if the differences between the groups isolated were significant (table 6.2.4). Only the first PC was analysed, as this component had by far the most impact on variance (33%). It was clear that groups differed highly significantly ($p<0.001$) from each other (table 6.2.4).

Table 6.2.4: Analysis of group variance, using Principle Component 1 scores:

| SS effect | Degrees of freedom | MS effect | SS error | Degrees of freedom | MS error | F | F probability |
|---|---|---|---|---|---|---|---|
| 99.34 | 3 | 33.11 | 16.66 | 113 | 0.148 | 224.6 | <0.001 |

A post hoc analysis was subsequently executed to determine which groups differed significantly from one another. As indicated in table 6.2.5, all groups differed significantly from all others ($p=0.00137$), illustrating that the correct variables were used as indicators.

Table 6.2.5: Post hoc analysis to illustrate significant differences between groups. Means separation through Tukey method (*Marked differences are significant at $p < .05$)

| | | [1] M=-1.330 | [2] M=-.4137 | [3] M=.62138 | [4] M=1.8785 |
|---|---|---|---|---|---|
| G 1:1 | [1] | | .000137 * | .000137 * | .000137 * |
| G 2:2 | [2] | .000137 * | | .000137 * | .000137 * |
| G 3:3 | [3] | .000137 * | .000137 * | * | .000137 * |
| G 4:4 | [4] | .000137 * | .000137 * | 000137 * | |

A last procedure was to determine the effect-size (eta-square); to illustrate the practical importance of the differences. The estimated value of 0.85 of this effect indicated a very significant effect, since an eta-square of 0.14 is considered large (Cohen, 1988).

In summation: initial descriptive statistical analysis highlighted significant variation in the population, illustrating socio-economic diversity. After the descriptive phase key variables were identified pragmatically and some combined to reduce variation, facilitate analysis and provide a farmer profile. Factor analysis used as dimension-reducing technique isolated indicators that elucidated diversity

within the community. These were used to arrive at a typology with four farmer types significantly different from one another in terms of access to resources, inclination towards agriculture and performance. The results clearly supports the hypothesis that diversity must be dealt with in agricultural support models. The results of the analytical process is described in the following sections of this chapter.

#### 6.2.3.2 Socio economic profile

The first step in the social impact analysis of the project was a broad descriptive socio-economic profile of the target population, describing how the quality of life of participants was influenced. A summarised socio-economic profile of the representative sample group (n = 123) reads as follows: The average household had five to six members, with a coefficient of variance (CV) of 38. The average monthly expenditure (table 6.2.6) of the respondents on food, transport, savings, electricity and leisure amounts to roughly R1100 per month, but variation within the sample group was very high (CV=647). Although the average spending on leisure was R140, only half the respondents provided this information, conceivably those better off. Seventy percent of households reported at least one unemployed person (CV=60).

Table 6.2.6: Average monthly spending of Sheila ward respondents on five basic items:

| | Food | Transport | Savings | Electricity | Leisure |
|---|---|---|---|---|---|
| **Mean spending (R)** | 390 | 200 | 140 | 105 | 140 |
| **Coefficient of Variation** | 66 | 95 | 121 | 57 | 95 |

Regarding services, 76% of the households concerned had access to electricity, while 83% had a television and 32% access to a phone. Although only 26% had running water in the homestead, most had access to a public tap within 200m and in the Sheila village, most had water on site, as discussed in chapter 6.1.4. Only 24% had their own vehicle, while 32% used taxis and 43% the bus service.

Education levels (illustrated in Figure 6.2.4) of respondents were higher than that of the total population of the ward, as described in chapter 6.1.4. Whilst the largest group in the ward had a primary school education the largest group in the survey (46%) had an education level of between grades 8 and 12. Sixty eight percent of households had on average two school-going children (CV=52).

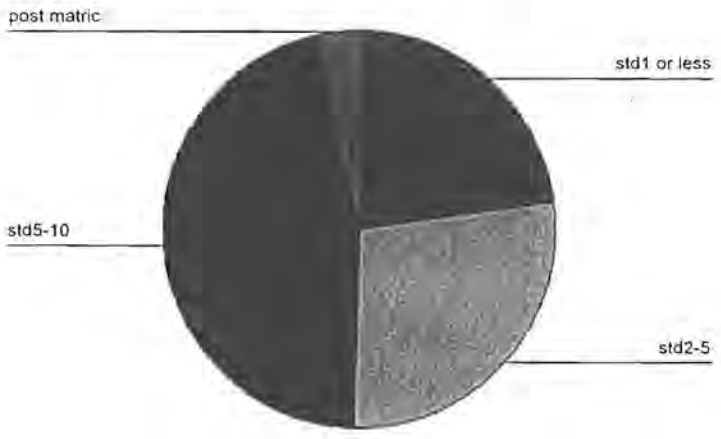



Figure 6.2.4: Education levels of respondents from three Ditsobotla villages

With regard to agricultural activity, it was noticeable that all respondents viewed themselves as farmers, although 79% stated that they had previously held other employment. Moreover, although most respondents were agriculturally active to some extent, 69% of households declared off-farm income and 55% received remittances, whilst 62% of households stated that at least one child had left the house (CV=58). Almost half (49%) the respondents declared a pension and in total, 89% stated that they supplemented their agricultural activities. All respondents were so called 'full-time farmers' for on average 17 years (CV=70). Roughly half the respondents (48%) stated that they had three sources of income, while 33% reported two income sources. Seven percent of households reported four income sources, while 11% claimed they had only agriculture as an income source. This is highly unlikely and the statement is probably due to the perception that support favours so-called 'bona fide' farmers. Given that the survey was perceived as an agricultural initiative, respondents probably over-emphasised agricultural interest throughout the survey.

In total 73% of respondents stated that they were involved in the erstwhile Sheila project and the vast majority (85%) believed that the project was beneficial to the community, although only 76% stated that they learnt more about agriculture whilst the project was in progress.

#### 6.2.3.3 Access to land

As most villagers, respondents had access to the piece of land on which the homestead is located. The homestead yard is utilised to an extent for agricultural activities by roughly two thirds of respondents; for vegetables, poultry or fruit or a combination thereof (figure 6.2.5). Although the precise extent of agricultural yard practices was not ascertained, in most cases these activities were not intensive and contributed only to a limited extent to household food security.

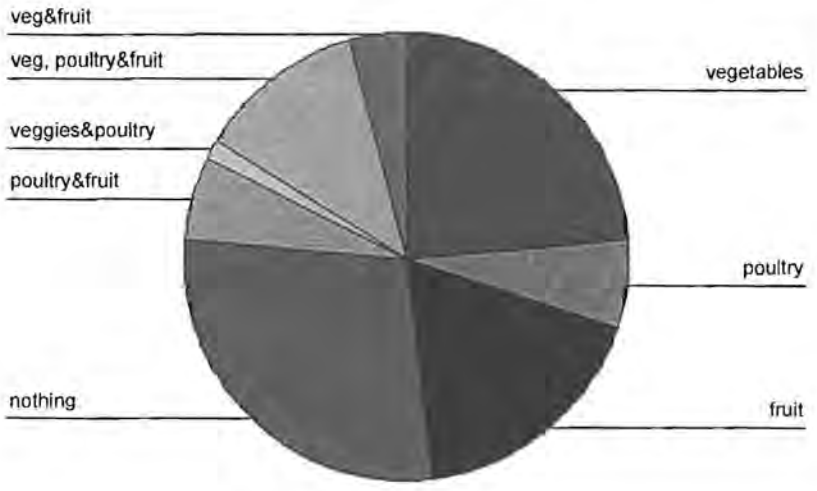



Figure 6.2.5: Utilisation of the homestead area for agricultural practices

In terms of cropping land, the average land size the 123 respondents had access to (through sharecropping agreements) was 33ha (CV = 118), but the high coefficient of variation limits interpretation. Lands were located on average seven kilometers from the homestead, although this also varied extensively (CV=642). Forty percent of respondents felt that distance to cropping fields was a constraint – primarily as control was difficult and theft a significant issue. A breakdown of available land is shown in table 6.2.7: More than half the respondents had access to between one and 15 ha, while those that had access to 16 to 30 hectares (mostly smaller sharecroppers) comprised another third. Together these farmers accounted for more than 80% of available land. Only eight farmers had access to more than 100 ha.

Table 6.2.7: Land size frequencies of ruralites from Sheila ward:

| Land size (ha) | Farmer numbers | Percent |
|---|---|---|
| 0 | 1 | .8 |
| 1-15 | 65 | 52.8 |
| 16-30 | 35 | 28.5 |
| 31-100 | 14 | 11.4 |
| 101+ | 8 | 6.5 |
| Total | 123 | 100.0 |

For a comprehensive view, the hectares actually planted should be taken into account. The average hectares per respondent planted in the two seasons up to July 2000 were less than 19 hectares, but again with limiting variation (CV=103). Respondents had access to 3970 ha in total.

During the 99/00 season 2215 ha were planted, compared with considerably less (1130 ha) during the previous two seasons. During the 00/01 season, only 15 farmers in the study area planted, as credit availability was extremely limited. During the 1999/00 season, 56% of the respondents planted, while during the previous two seasons 30% of respondents planted. Despite this, 51% of respondents felt they required more land. The emotional and cultural value of land is significant and the overriding perception is that land is perceived as a form of security and a potential mainstay for an improved livelihood. As illustration: when respondents were asked if they would sell their land for an exorbitant price, only 5 respondents (4.2%) said yes. Contrary to the finding of Francis (1999) there seemed to be no significant shift from the security and customary value (to a market value) that land holds to most ruralites.

A quarter of respondents regularly rent land, for which 75% pay by providing a share of the harvest to the landowner. However, 60% stated that they were dissatisfied with sharecropping agreements. Attitudes toward contractors varied from 37% of respondents that had a positive view to 54% that had a negative perception of contracts, while 9% were neutral. Conflict and mistrust were described as significant constraints in crop production in the area. This led to much land not being cultivated and dwindling co-operation through sharecropping. This will be dealt with in the next chapter.

#### 6.2.3.4 Access to inputs

Forty percent of farmers own at least one tractor, but in most cases, the state of mechanisation is poor. Most mechanisation dates back to the project era and very few farmers have capital resources for new equipment. As the project was terminated more than seven years ago, most equipment of that era is no longer functional or only barely so. Another concern is that only 36% of respondents have access to storing facilities, i.e. a store at the home, which means equipment or inputs are often vulnerable to the elements.

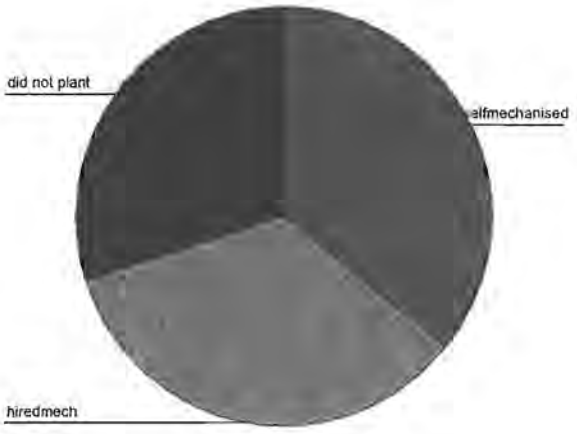



Figure 6.2.6: A breakdown of mechanisation sources for respondents of the Sheila ward

Mechanisation services are therefore often rented: Almost two thirds of all respondents (62%) indicated that they at some time hired mechanisation services for the cultivation of their allotted land. These services are rented from sharecroppers or affluent farmers in the area. Neighbouring white farmers also cultivate lands on contract. For the 1999/00 season, the division between those that used their own mechanisation, those that hired mechanisation and those that did not plant, were roughly equal, as illustrated in figure 6.2.6.

A major constraint in crop farming is that farmers plant late, usually during December and often as late as January. Only 30% of respondents thought it prudent to cultivate during spring and 34% stated that summer is the right time for cultivation. Only 36% thought that winter ploughing was the best option – a specific extension message of the past few years. A significant reason for planting late is that many agricultural decision-makers (with capital) are migrants and only return to the villages during December. The most significant reason for planting late is the lack of timely financing. Funds for cropping practices are limited and cultivation has to wait until a loan is secured or the holiday bonus of a family member becomes available. The importance of timeous planting is often not realised as 81% of respondents stated that their ploughing time was fair to good. This might also be due to the fact that the livestock from the village utilise crop residues until well into spring, complicating cultivation practices. Most respondents (86%) however felt that if they planted late the reasons were either late rains or late financing.

Most respondents (87%) buy inputs at the local NWC at Lichtenburg located 30 km to the southeast. Almost 70% of respondents used hired transport services to access these inputs. By far the majority of farmers buy only four items for cultivation, fuel, seed, fertiliser and equipment parts. Most farmers know the value of a good seed source and usually buy adapted hybrids from the co-operative. However, some farmers take grain from the previous harvest – often seed of different cultivars, mix and sift it and plant the selection. Apparently, this method could retain plant vigour for up to 6 years, circumventing a major cost. Fertiliser is most often sparingly bought and usually reflects the financial position of the farmer and not the optimal amount. The average kilograms seed and fertiliser bought are provided in table 6.2.8, although variation within the survey population again limits interpretation. These data only illustrates the significant diversity in the agricultural community. Since no indication of usage per hectare is available, no further inferences are possible from these data. However, the extent of input usage is significant, indicating significant scope for a more organised project approach.

Table 6.2.8: Kilograms of the major inputs utilised by Sheila respondents:

| INPUT | MEAN (kg) | CV | MIN (kg) | MAX (kg) |
|---|---|---|---|---|
| **Maize seed** | 205 | 95.6 | 50 | 1125 |
| **Maize fertiliser** | 2100 | 86.7 | 400 | 13 000 |
| **Sunflower seed** | 150 | 70.4 | 2 | 700 |
| **Sunflower fertiliser** | 1100 | 60.0 | 50 | 3000 |

In terms of labour used, 54% of respondents reported family members providing labour for key cultivation practices; mostly weeding and harvesting. On average, two family members (CV=76) provide labour for 35 days (CV=220) per annum. During these key times, hired labour also plays a

major role and 73% of respondents reported that they hired on average 11 people (CV=60) for 30 days (CV=277) per annum. The mode and average for a daily wage was roughly R15 per day. Labour plays a key role in agricultural production in the area. A revitalised project, increasing the area utilised, would therefore have a significant impact on labour requirements and subsequent economic activity.

#### 6.2.3.5 Crop production

Respondents were asked what they thought their maize yield (as the dominating crop) under perfect circumstances would be. Only 12% of the respondents felt that 4 tons per hectare was possible, whilst 4.2t/ha has actually been determined as achievable (Bembridge *et. al.*, 1982). The majority (56%) felt that three tons per hectare was achievable. This was also the median. However, 32% of respondents felt that two tons per hectare was the most that could be produced. Results in terms of actual production for the years in question were relatively low, as can be seen from Table 6.2.9. These figures are actually flattering as they reflect the results of respondents who actually obtained a harvest, whilst 5% of those that planted did not obtain any harvest and were not included.

Table 6.2.9: Results of respondents that harvested during the 1997/98 & 1998/99 seasons:

| VARIABLE | Respondents | Mean ha/yield | CV |
|---|---|---|---|
| Maize ha planted '97/98 | 50 | 31.2 | 101 |
| Maize yield '97/98 | 46 | 1.7 | 44 |
| Maize planted '98/99 | 48 | 29.2 | 69 |
| Maize yield '98/99 | 40 | 1.7 | 46 |
| Sunflower ha planted '97/98 | 56 | 25.3 | 76 |
| Sunflower yield '97/98 | 47 | 0.8 | 71 |
| Sunflower ha planted '98/99 | 69 | 24.3 | 88 |
| Sunflower yield '98/99 | 57 | 1.0 | 67 |

The average production for maize and sunflower is 1.7t/ha and 0.9t/ha respectively, which is relatively low. However, it must be recognised that the input costs per hectare for most respondents are also relatively low. The minimum fertiliser is used and often seed from the previous yield is 'recycled' as explained. If an average for three years is determined and recalculations done for farmer groups (as a first attempt to deal with diversity), an upward trend is evident (see table 6.2.10). The group with the standard 15ha had lower yields than those with less than 10ha, who plant on average less than 5 ha more intensively. Again, results must be viewed with circumspection, given the high variation in data.

Table 6.2.10: Production data for different size of land holdings planted.

| **Mean ha planted** | **% of respondents** | **Mean maize yield** | **Mean sunflower yield** |
|---|---|---|---|
| Not planted | 13 | 0 | 0 |
| <10ha | 25 | 0.5 | 0.32 |
| 10-15ha | 30 | 0.33 | 0.55 |
| 16-45ha | 25 | 1.09 | 0.33 |
| >45ha | 7 | 1.36 | 0.67 |

Respondents were also asked how many bags of maize they usually hold back for household consumption. The majority (45%) kept 11 to 25 bags, while another 28% kept 26 to 50 bags of maize in storage. The mean was 24 bags (CV = 44). Only 17% did not hold back any bags for consumption.

#### 6.2.3.6 Constraints in crop production

The most serious constraint in cropping was identified as access to finance: More than 40% of farmers stated that the lack of financial services was the most serious constraint. In fact, three quarters of all respondents felt that it was extremely difficult to obtain credit. This is linked to the high level of debt in the community since the project era, as well as a lack of security. Previous analyses (Bembridge, et. al., 1982; Stilwell; 1985) and recent interaction with the Landbank established that farmers often do not appreciate or understand the credit process. Landowners with access to 15 ha could during 1999 only apply for production loans, while those with access of 75 ha or more could obtain broader finance.

Farming conditions are currently seen as difficult, due to high input cost and lack of finance. Some farmers speculate that they were better off when animal traction was still used, arguing that although production was lower, the relative value of the harvest was higher than today. Others felt that during the project, farming conditions were favourable, as management buffered then against risk. Although there was little freedom in agricultural choice, income was secured. For 1999/2000, only 15 farmers at Sheila obtained credit. Drought (15% of farmers) and theft (14% of farmers) were also perceived as the major constraints, while mechanisation (linked to financial constraints) was the most pressing constraint to 19% of farmers. Only 6% thought that management skill was the major problem. Responding to a new question, 60% found access to inputs a problem while 20% found marketing produce a significant constraint. Relating to theft, 75% found the lack of fencing a serious problem. Only 19% found that community conflict is a problem. These constraints are illustrated in figure 6.2.7:

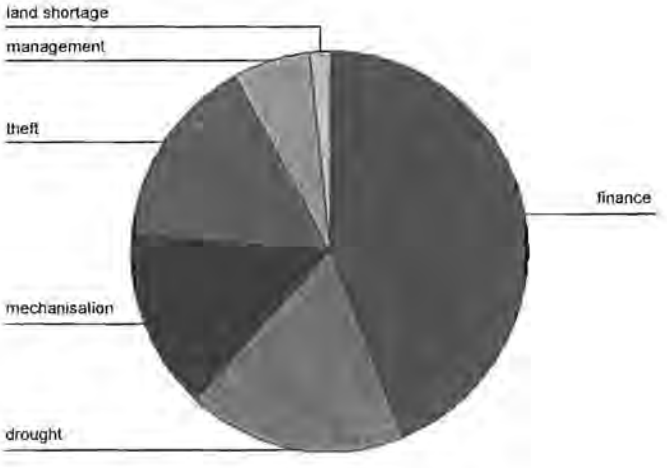



Figure 6.2.7: Constraints in crop production as perceived by respondents from Sheila ward

### 6.2.3.7 Livestock farming

Livestock farming at Sheila is not a major enterprise, as seen in table 6.2.11. Most respondents (43%) reported no animals while the remainder generally had only limited stock. Only 12.5% of households had more than 20 animals. The average number of animals per respondent is under ten and includes cattle, sheep, goats, donkeys and pigs.

During the early 1980s the vast majority (74%) had less than 6 head of cattle, the number required to satisfy primary needs. Since then cattle numbers dropped significantly, following a decrease in grazing land and an influx of people, reported by respondents. Indirectly these settlements caused a further reduction in livestock, as theft significantly increased during the past two years. Mortality and limited marketing (less than 10% of respondents reported selling) further inhibit the enterprise. Twenty percent of cattle owners reported mortality with an average loss of three animals p.a., representing a significant economic loss. Mortality was mainly subscribed to disease (55%), drought (24%) and feed shortages (17%). Only 27% of respondents reported reproduction, with an average of three calves p.a., whilst 2.4% reported purchasing stock. Only 18% had sheep, 9% goats, another 9% donkeys and 6% pigs. Only 30% reported having poultry. This suggests that although livestock plays a part in rural households, in most cases this does not constitute a production-oriented enterprise. Cattle are primarily kept for household milk production, as a form of security, an asset to fulfil social obligations and as investment. Small stock and poultry is kept mainly for home consumption.

Table 6.2.11: A compilation of livestock types (excluding poultry) of respondents from Sheila ward

| Animal numbers | Respondents % |
|---|---|
| 0 | 43 |
| 1-5 | 10 |
| 6-10 | 16.5 |
| 11-20 | 18 |
| 21-44 | 11 |
| 44+ | 1.5 |
| Total | 100 |

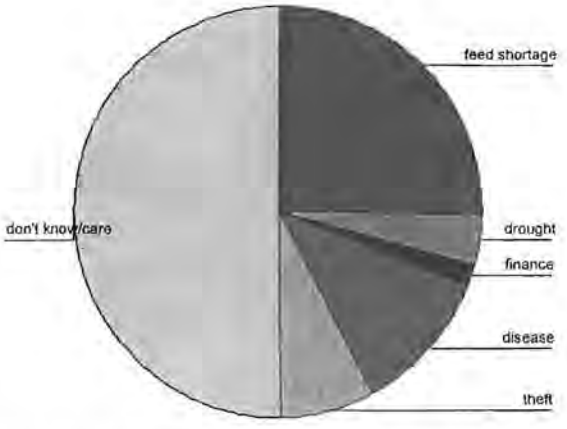



Figure 6.2.8: Serious constraints in livestock farming, as perceived by Sheila farmers

Of the 50% of respondents that answered the question regarding the most serious constraint in livestock production (fig 6.2.8), half mentioned feed shortage, and another 20% disease and 14% thought that theft was the most serious problem. In terms of fodder flow, animals almost exclusively made use of the overgrazed communal range and crop residues. Half the respondents realised that the range is in poor condition (51%), but 33% believed it to be fair and 16% perceived it as good.

Only 28% of respondents bought feed while 19% bought medicine when required. Only 17% reported income from livestock, with a mean of R2350 p.a., but with a high CV of 132, indicating high variation and again illustrating economic diversity in the community. Comparing this with the 40% of respondents that bought fodder and 20% that bought medicine, illustrates that stock is not primarily kept for its economic contribution. Annual costs for fodder and medicine are shown in table 6.2.12:

Table 6.2.12: Summarised spending of Sheila ward respondents on fodder and medicine.

| VARIABLE | % respondents | MEAN | CV | MIN | MAX |
|---|---|---|---|---|---|
| **Fodder cost** | 28 | R961 | 172 | 30 | 7500 |
| **Medicine** | 19 | R385 | 179 | 15 | 2500 |

### 6.2.3.8 Support

A third of respondents belong to a formal farmers' organisation, although this refers mainly to sporadic attendance of study group meetings. When given several options with regard to where respondents could obtain information, the extension officer stood out as the most important source. However, neighbouring farmers, the co-operative and a combination of these, are the basis of all information systems. Most farmers do access various sources of agricultural information (Figure 6.2.9).

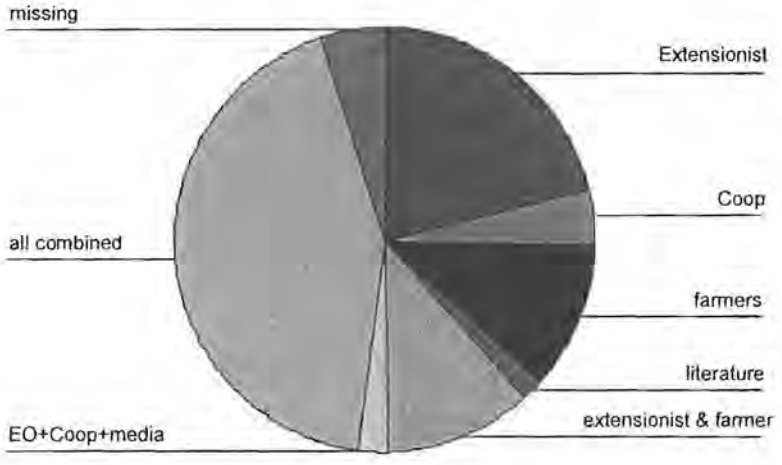



Figure 6.2.9: Agricultural information sources of ruralites from Sheila ward, Ditsobotla

Since the project was terminated, support to the farmers of Sheila diminished significantly. It is difficult to obtain credit, and access to inputs is constrained not only by lack of direct funding, but also by logistical problems such as lack of transport. Another obvious constraint is the lack of technical knowledge, although all respondents do not perceive this as a serious constraint. When asked what their training needs (fig 6.2.10) were, 39% felt that they did not urgently need specific training. However, 24% felt that training on cultivation practices would be useful, while 17% perceived financial management training as important. Training with regard to mechanisation, was the priority of 15% of the respondents.

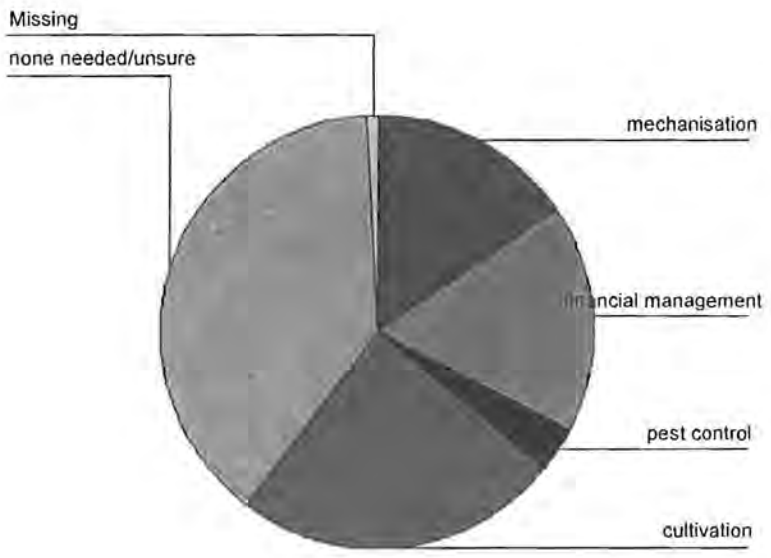



Figure 6.2.10: Training needs as perceived by respondents from the Sheila ward

### 6.2.3.9 Defining a farmer typology for the Sheila project

Although the previous section provides some insight into the agricultural status of the community and the impact the project had on participants, a distinct remaining impression is that results are vague, due to the high variation, i.e. the extensive diversity within the sample community. This is clearly illustrated by the high coefficient of variation (CV) values. This indicates diversity and highlights differences in agricultural prowess through differences in access to resources and services. Rural diversity clearly impacts on performance and should be quantified.

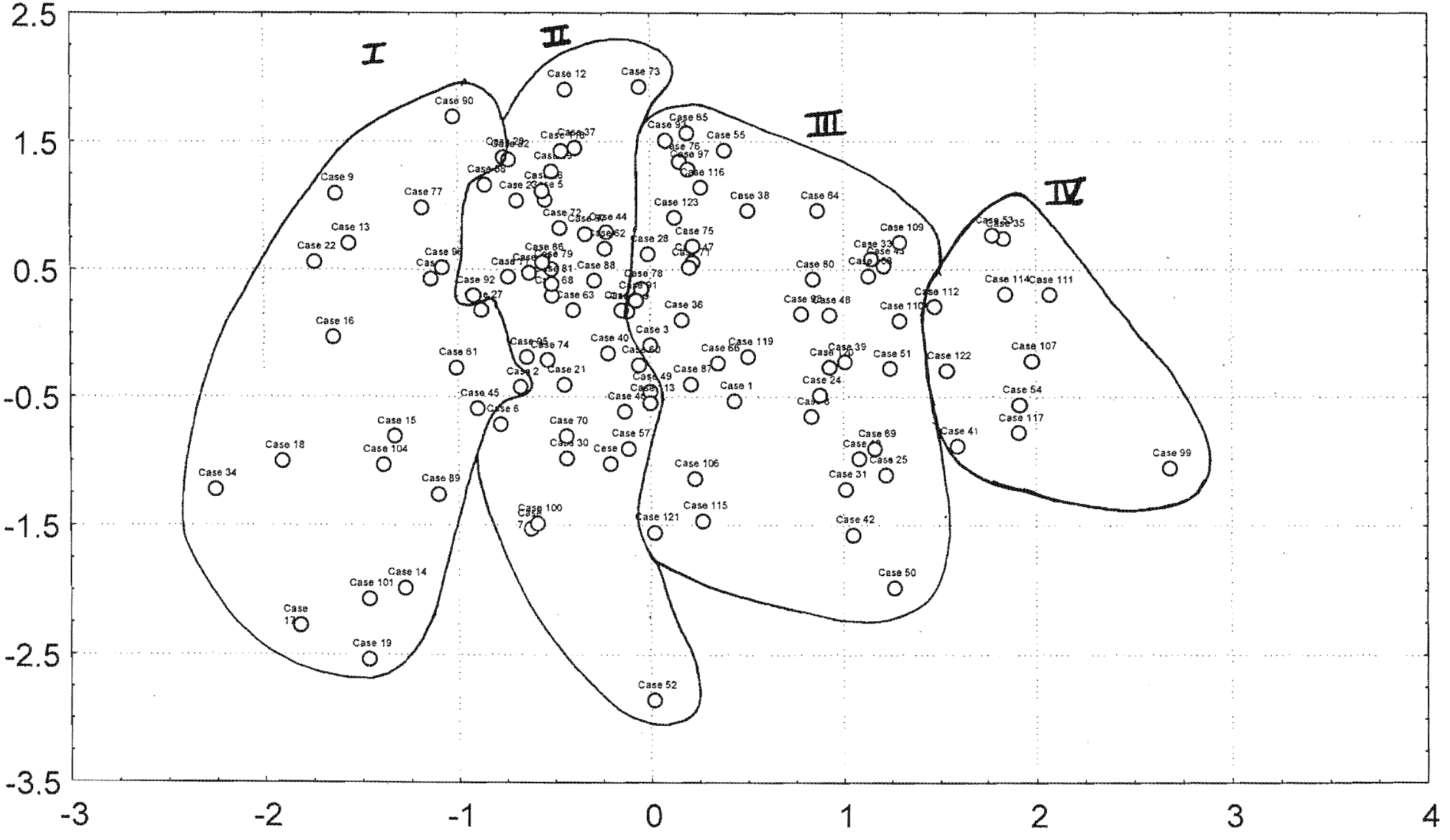
As argued extensively throughout this study, a typology could highlight constraints within more homogeneous groups and therefore facilitate focused support. The institutional impact and LFA established that project planning and implementation was not optimal, especially if evaluated with the project design criteria established with this study. In particular diversity was ignored, although it was described superficially in the analysis by Bembridge *et. al.* (1982), who proposed 'a development plan based on a differentiated strategy'. Dealing with diversity would facilitate sound development strategies and projects and therefore enhance the recognition of social reality, the development of linkages and applicable HCD.

As described in a previous section (6.2.3.1), dealing with the statistical procedures used, a limited number of key variables, responsible for most of the variation, were identified. These variables represent key farmer efficiency criteria, impacting mostly on variance or diversity. They include socio-economic aspects, resource access and crop and livestock performance criteria:

Education, household expense and household size
Number of incomes (pension, remittances, business, etc.)
Mechanisation (own/hired), land (available & planted), inputs used (kg seed, fertiliser), yields
Animal numbers (cattle, small ruminants, pigs, and donkeys)

As described in section 6.2.3.1 a PCA (principle component analysis) was subsequently done to group farmers, facilitating the determination of the types of the typology. The determination of the actual groups was a pragmatic process, informed by the PCA illustrated in figure 6.2.11. Through the long term engagement with the community, spatial distribution of respondents in the PCA, and comparing these with quantitative values obtained for the ten isolated variables, it was decided that four relatively homogeneous groups could be isolated in a model describing the 123 participants. Although the model will need to be adapted according to the area in which it will be used, it should have wider applicability. The four types developed from the principal component analysis are illustrated in figure 6.2.11 where PC 1 is plotted against PC 2. As PC one describes four times more variance than PC two, focus should be more on the horizontal axis. Inactive landowners are plotted between -0.75 and -2.25, opportunists between -0.75 and -0.25, sharecroppers between -0.25 and 1.25 and commercialising farmers between 1.25 and 2.75. As described in the statistical analysis procedure (chapter 6.2.3.1) this typology tested repeatedly as highly valid, whilst differences between all four groups were highly significant. The typology is therefore a representative model of agricultural types in the Sheila area.

Figure 6.2.11: A two-dimensional representation of survey respondents from a Principal Component Analysis, according to ten key criteria (y-axis = PC2 & x-axis = PC 1



The first group (the 24 most left circles or individuals in figure 6.2.11) represents respondents described in this study as 'inactive landowners'. Their characteristics as determined by the key criteria are described in table 6.2.13. It is obvious that this group does not fit the profile of a typical emerging farmer. The absence of any yields and thus food production is disturbing, especially as some input costs were committed. The small area cultivated suggests a subsistence type of enterprise or rather one of several livelihood strategies followed by a major part of the rural population of the province.

Table 6.2.13: A description of 'inactive landowners' of the Sheila typology, according to the key criteria established:

| | |
|---|---|
| Inactive landowners:<br><br>19% of farmers | Have 15 ha available<br>Less than half plant one to three hectares, with hired mechanisation<br>Basic primary school education<br>Spend R760 on food, transport, electricity, savings & loans per household of 5.6<br>Have 2.3 sources of income<br>Buy on average 760 kg in seed & fertiliser/season<br>Do not produce any grain<br>Own roughly 6 head of livestock |

The second group (the next 46 circles or individuals to the right in figures 6.2.11) represents respondents described in this study as 'opportunists'. Their characteristics as determined by the key criteria are described in table 6.2.14. This group represents opportunists, as their agricultural activity varies according to the resources and opportunities available during a particular season. While these farmers most often do not have their own mechanisation, they obtain these services through contractors. Noteworthy is the slightly higher sources of income, the yield, although still relatively low and the area utilised.

Table 6.2.14: A description of the 'opportunists'-type of the Sheila typology, according to the key criteria established:

| | |
|---|---|
| Opportunists<br><br>37% of farmers | Have between 10 and 30 ha available<br>Plant on average 9 ha<br>Less than one in ten has a tractor<br>Basic primary school education<br>Spend R800 on food, transport, electricity, savings & loans per Household of 5.3<br>Have 2.4 sources of income<br>Buy on average roughly 1200 kg in seed & fertiliser/season<br>Produce 0.3t/ha of maize grain and 0.4t/ha sunflower<br>Own, on average, less than 6 head of livestock |

The third group (the next 44 circles or individuals to the right in figures 6.2.11) represents respondents described in this study as 'entrepreneurs'. This group plants significantly more hectares, have in the main better access to mechanisation and employ more livelihood strategies. Also significant are the higher input quantities and better yields. Although this group certainly does not conform to an ideal emerging farmer group, there is obvious potential. Their characteristics as determined by the key criteria are described in table 6.2.15.

Table 6.2.15: A description of 'entrepreneurs' of the Sheila typology, according to the key criteria established:

| | |
|---|---|
| Entrepreneurs<br><br>35% of farmers | Have between 10 and 150 (average 40) ha available<br>Plant 25 ha on average<br>Two thirds have tractors and others use hired mechanisation. Average 1.3 tractor<br>Primary school education<br>Spend R1000 on food, transport, electricity, savings & loans per household of 5.3<br>Have 2.7 sources of income<br>Buy on average roughly just under 2400 kg in seed & fertiliser/season<br>Have average yields of 1t/ha for maize and 0.5t/ha for sunflower<br>Own less than 10 head (8) of livestock |

The final and smallest group (the 11 most right circles or individuals in figures 6.2.11) represents those respondents described in this study as commercialising farmers. This most affluent group is the first for which the land holdings could be considered in terms of efficiency, particularly given the average of two tractors per owner. However, the actual planted area is still questionable in terms of economic viability. This group has a significantly higher education, income, household-spending and larger crop and livestock enterprises. Their characteristics as determined by the key criteria are described in table 6.2.16:

Table 6.2.16: A description of type four of the Sheila typology, according to the key criteria established:

| Type of farmer | Description |
|---|---|
| Commercialising farmers<br><br>9% of farmers | Have between 30 and 300 hectares, with an average of 115 ha available<br>Plant between 25 and 165 ha with an average of 76 ha<br>Do their own mechanisation and own two tractors<br>Have a high school education<br>Spend R1800 on food, transport, electricity, savings & loans per household of 5.4<br>Have more than 3 sources of income<br>Buy on average roughly 6000 kg in seed & fertiliser/season<br>Have average yields of 1.7t/ha for maize and 0.6 t/ha for sunflower<br>Own, on average, more than 40 head of stock, some much less |

#### 6.2.3.10 Summation of social project impact

Social impact analysis entailed a qualitative phase complemented by a quantitative questionnaire. It was established that most respondents were agriculturally active, while in total, 89% supplemented agricultural income. The vast majority (85%) perceived the project to be beneficial, but only 76% felt they had gained skill through the project. The average respondent had access to 33ha; with only eight having access to more than 100 ha. The average hectares planted were less than 19ha, but still 51% felt that they required more land. The state of mechanisation is mostly poor and therefore 62% indicated that they hired mechanisation services. The primary constraint in cropping was access to finance. Livestock farming at Sheila is not a major enterprise. Only 17% reported income from

livestock, with high variation. This description was augmented with the objective of this section; a typology summarised in table 6.2.17.

Table 6.2.17: A summarised description of the four groups of the typology for the Sheila ward:

| Farmer Type | Ha | Used | Mechanisation | Hh $ | Yield/ ha* | Input kg | Education | Hh size | Inc. # | Stock # |
|---|---|---|---|---|---|---|---|---|---|---|
| **Commercialising** | 110 | 75 | Own | R1800 | 2.3 | 6000 | 3 | 5.4 | 3.1 | 43 |
| **Share-Cropper** | 40 | 40 | 70% own | R1000 | 1.5 | 2400 | 2.3 | 5.3 | 2.7 | 8 |
| **Opportunist** | 15 | 9 | 92% hire | R800 | 0.7 | 1200 | 2.1 | 5.3 | 2.4 | 6 |
| **Inactive Landowners** | 15 | 1 | hire | R750 | 0 | 760 | 2.3 | 5.6 | 2.3 | 6 |

*Data represent a figure, combining maize and sunflower yield to be used only as a means to distinguish types

Rural diversity impacts on agricultural performance and should be quantified. The hypothesis that diversity must be dealt with to enhance project performance, is hereby proven. Support strategies for these different types should clearly differ, although it is feasible that all types could be provided for in a project. Serving farmers according to type will enhance clarity of the client profile, facilitate appropriate strategy per type and enhance development. Given the constraints expressed by all types the potential for a project approach as support model is significant.

### 6.2.4 Financial & economic impact

#### 6.2.4.1 Introduction

This analysis includes a financial and economic impact determination for participating farmers and the project as a whole. However, interpretation was hampered by a dearth of reliable records pertaining to specifically input usage and yields. The ARDRI team (Bembridge, *et. al.*, 1982) during the 1980s analysis also raised this and the DBSA team (Stilwell, 1985) had the same complaint. Those teams had access to records of the NWC, who at the time were responsible for project management, and these are again used. Quantitative data has since then been difficult to obtain. According to extension personnel active during the project, data was lost during the political changes of 1994. Through the questionnaire it was possible to gather current data, although only a few farmers were clear on input costs and precise yield in tons per hectare. The majority describes yields in terms of bags or wagon loads with an unknown capacity. The verification of data through comparison with that obtained from other, similar studies and certain assumptions, was used to circumvent this problem.

Financial analysis focuses on the business prospects of a project. It deals with revenue earning considerations, with profit being calculated at market prices. In this manner capacity for income at two levels, farm and project level, is determined (Gittinger, 1982). Sources that reflected the going prices for inputs and outputs of the project were used. The objective was to establish if direct costs (representing all associated production and capital costs) were covered by after tax income, thus creating incentive to participate (Van Rooyen, 1986). At farmer level, basic crop enterprise input cost with corresponding yields, sales and household consumption figures were sourced. For financial

analysis for the agents, cost estimates and the fiscal impact of the project was determined. This included values of goods and services needed to initiate and maintain (investment and running cost) the project (Van Rooyen, 1986); i.e. infrastructure, financing, staff, training, marketing, storage, effect on balance of payment. Output dealt with entailed yields and sales.

#### 6.2.4.2 Describing the "without project' scenario

A description of agricultural activities without the project is appropriate, as the difference between the project and the 'without project' scenario provides a sound indication of the value of that project. Certain assumptions had to be made for this comparison, and these are described.

According to work done by Seobi (1980), land holdings in the area before the project (during the late 1970s), varied between 3 and 30 hectares, but were generally smaller than 5ha, to the extent that they were not viable. More than a third of all land right holders did not cultivate, due to a lack of capital, limited credit facilities and debt (Bembridge, *et. al.*, 1982). Production did not vary significantly from a mean yield of 500 kg per hectare. However, the few commercially inclined farmers with better tillage, weed control and fertiliser practices achieved considerably higher production levels, supporting the diversity principle. Redelinghuys (1981) also found that a limited number of farmers were actively cropping, with the remainder hiring out their land to other farmers, through sharecropping agreements. Less than half the farmers bought inputs such as fertiliser and then at very low rates. During 1980, average gross income for crops and livestock was R529 and R161 respectively, while the net return per farm was R315. In terms of 1994 values this would roughly be R3070 for crops and R930 for livestock, providing a net return per farm of ±R1800. The implication is that most farmers lived below the subsistence line (Seobi, 1980). Adoption rates of sound cultivation practices were low and fertiliser rates too low to be effective.

Results from recent studies by this researcher in communities adjacent to the project area indicate that 70% of ruralites still cultivate less than 15ha, with only a quarter cultivating more than 50ha. Less than a third of Ditsobotla and Mafikeng landowners currently cultivate, indicating that cropping decreased significantly during recent years and production figures are now similar to those of the late seventies. Sharecropping remains the main cultivation model. Average yield data for the period 1997/98 until the 2000/01 seasons, vary between 1.3 to 1.7t/ha for maize and between 0.6-0.9 t/ha for sunflower (Verschoor 2002a; 2002b).

However, entrepreneur-type farmers in the Ditsobotla and Mafikeng districts do exist. These types of farmer bought 280kg of maize seed on average, during the 2001/2002 season. The average fertiliser purchase was 1.6ton. Hired labour on average entailed 4.6 people per season while 2.7 family members provided labour during stages of the production process. This type of farmer cultivates 50 hectares of maize on average, from which an average yield of 1.9t/ha was realised. Respondents on average had 40 head of livestock, mostly cattle. Only 28% of respondents reported income from this enterprise, with an average of R7500 p.a., although variation was extremely high. The average farmer bought 1.2 tons of fodder at a cost of R1130 and spent R700 on animal medicine p.a. On average,

respondents spent R1100 on basic household items (as described in the social impact section), but variation was very high (Verschoor, 2002b). These results are similar to those obtained from farmers in the entrepreneurial and commercialising type of Sheila typology.

The 'average farmer' situation differs widely, underlining the need for recognition of diversity. Data for two villages illustrate this: the average area planted under sharecropping at Vryhof (in the Mafikeng district) is just under 5ha, while 29ha are planted on average at Bodibe (in Ditsobotla). At Bodibe 150kg maize seed is bought per respondent in a season, while 70kg is bought at Vryhof. At Vryhof average amount of fertiliser bought is 1 ton while at Bodibe it is 0.5ton. Hired labour amounts to 2-4 people per season, with a family member also involved. Average yields for this group is lower at one ton maize per hectare at Bodibe and 0.5 ton/ha at Vryhof.

At Vryhof the focus is on livestock with average herds of 40 head compared with 17 at Bodibe. Stock income of R1500 p.a. at Vryhof and R1800 p.a. in Bodibe compared poorly with direct costs of R800 and R150 p.a. at Vryhof and Bodibe respectively (Verschoor 2002a).

Clearly differences between farmer types are vast – both in terms of cropping and the livestock enterprise. What is particularly disturbing is that despite a small number of Ditsobotla farmers planting areas compatible with those during the project era, yields are roughly 20% lower. Various explanations are possible. Input-usage is significantly lower than during the project era. Especially fertiliser is sparingly used. Weed control is mostly mechanical and most often sub-optimal. Mechanisation is often also of a poor quality, with especially primary cultivation practices being sub-standard; i.e. power-output of tractors is insufficient to ensure thorough ploughing.

It is assumed that without a project intervention, expansion of agricultural activities from before the project would have occurred. However, the total area planted currently is not significantly higher than during the seventies, although a few sharecroppers individually do plant larger areas. It is therefore assumed that in a without project scenario, a typology with roughly the same four farmer types would exist. Percentages of farmers in the higher performing types would however have been significantly lower, as the opportunities created by the project would not exist.

Based broadly on the studies described above, and experience with farmers in the area, with assumptions regarding input costs for 2000, a Sheila typology, for a without project scenario is described in table 6.2.18 for the crop enterprise and in table 6.2.19 for the livestock enterprise. It is assumed that 140 farmers would have been active without the project, of which 5% would be 'commercialising', 12% 'entrepreneurs', 18% 'opportunists' and 65% 'inactive landowners'.

According to the extension manager of the Sheila ward, there is practically no communal grazing available in the Sheila ward, due to an influx of people, as reported earlier. Farmers most often keep their cattle at a 'cattle post' outside the ward.

Table 6.2.18: 'Without project' financial analysis for maize, for Sheila farmers during 2000:

| | Ha-used/ farmer | Input costs/ha* | Yield/ha | Total ton* | Maize price /ton | Income /ha (R) | Profit/h (R) | Profit/los s/farmer |
|---|---|---|---|---|---|---|---|---|
| **Inactive l/owners** | 2 | 600 | 0.5 | 91 | 810 | 405 | -195 | -390 |
| **Opportunists** | 10 | 650 | 1.0 | 250 | 810 | 810 | 160 | 1597 |
| **Entrepreneurs** | 25 | 850 | 1.8 | 744 | 810 | 1417 | 567 | 14175 |
| **Commercialising** | 50 | 1000 | 2.0 | 700 | 810 | 1619 | 620 | 30971 |

*Input costs determined with help from provincial agricultural economists
*hectare planted x yield/ha x % of 140 of farmer type

Table 6.2.19: 'Without project' financial analysis for livestock for Sheila farmers, during 2000:

| | Livestock #*/farmer | Livestock costs*/farmer | Livestock income (p.a.) | Livestock profit/farmer | Total livestock#* |
|---|---|---|---|---|---|
| **Inactive l/owners** | 5 | 530 | 600 | 70 | 455 |
| **Opportunists** | 10 | 560 | 1300 | 740 | 250 |
| **Entrepreneurs** | 20 | 600 | 2000 | 1400 | 340 |
| **Commercialising** | 40 | 1800 | 6000 | 1200 | 280 |

Figure includes mostly cattle, but also some small stock, pigs and donkeys
*fodder, vaccination, dip, medicine, lick
*based on percentages of type in typology

Important to note is that the financial analysis described in tables 6.2.18 and 19, is based on data obtained from studies in adjacent communities (Verschoor 2002a; 2002b). Given the accuracy of farmers' data and the general constraints in obtaining quantitative data described in the introduction, these data must be used with circumspection. Whilst it is valuable for descriptive comparison and trends, it should not be viewed in absolute terms.

#### 6.2.4.3 The 'with project' scenario: a farmer level analysis

A significant variation in profits was achieved throughout the project's lifetime (1976-1994) and inconsistent performance concerned farmers, management and evaluators. The ARDRI evaluation (Bembridge *et. al.*, 1982) indicated a range of farmer performance from most successful to unsuccessful, for the initial four project years. This was evident in the range of coefficients of variance recorded.

The DBSA evaluation (Stilwell, 1985) also found the same trend, exacerbated by extensive drought during the early 1980s. Variation in yields and profits indicate that variation in farming aptitude and attitude existed (Bembridge et. al., 1982), as illustrated in table 6.2.20. This constitutes project management's failure to align strategies to the design criterion of dealing with diversity.

Table 6.2.20: Average maize income and cost parameters per farmer group at Sheila: 1976-1980 (Bembridge et. al., 1982)

| | Contractor farmers | | | | Other participating farmers | | | |
|---|---|---|---|---|---|---|---|---|
| Item | Top third | Middle third | Bottom third | All | Top third | Middle third | Bottom third | All |
| Yield/ha | 3.2 | 2.4 | 2.4 | 2.7 | 2.5 | 2.2 | 1.8 | 2.2 |
| AGI | 11916 | 8962 | 7395 | 9494 | 4365 | 3423 | 2401 | 3400 |
| GI/ha | 397 | 299 | 246 | 316 | 291 | 228 | 166 | 227 |
| ATC | 7040 | 7192 | 7598 | 7286 | 2572 | 2510 | 2695 | 2592 |
| TC/ha | 235 | 240 | 254 | 243 | 171 | 167 | 180 | 173 |
| ANFP | 2973 | -530 | -2107 | 305 | 1793 | 913 | -294 | 831 |
| NFP/ha | 99 | -4.4 | -70 | 10 | 120 | 61 | -20 | 54 |
| ADR | 1765 | 1788 | 1853 | 1788 | 624 | 688 | 740 | 702 |
| DR/ha | 59 | 60 | 62 | 60 | 42 | 46 | 49 | 47 |
| AFFI | 3111 | -18 | -2056 | 1679 | 1438 | 228 | -1034 | 106 |
| FFI/ha | 103 | -0.6 | -69 | 56 | 96 | 15 | -69 | 7 |

LEGEND:
AGI = average gross income (value of maize sold/consumed)
GI/ha = gross income per hectare
ATC = average total cost (al costs related to production)
TC/ha = total cost per hectare
ATC/ha = average total cost per hectare
ANFP = average net farm profit (gross income-depreciation)
NFP/ha = net farm profit per hectare
ADR = average Debt repayments
DR/ha = debt repayments/ha
AFFI = average family farm inc. (consumption value + excess)
FFI/ha = family farm income per hectare

For the first four years of the project, 30% of all farmers were unable to earn net farm profits. Only 40% of contractors recorded positive net farm profits, despite impressive profits earned by the project as a whole (Bembridge *et. al.*, 1982). The top third compared favourably with commercial SA farmers, while the rest did not produce income to compare with other income groups in Bophuthatswana. Although average net farm profit increased over the years, variation remained marked, despite uniform practices. Practices (e.g. weed control), rather than soil potential caused most variation. Virtually all of these were done by the contractor and supervised by management. The majority of farmers absented themselves from any agricultural practices, indicating that project management effectively farmed on behalf of participants.

An analysis during 1999/2000 established that maize production at Sheila on the average 30ha cultivated, yielded 1.7t/ha while the average 25ha under sunflower yielded 0.9t/ha. High coefficients of variation values were again encountered, re-establishing the impact of economic diversity in the agricultural community. Sheila farmers participated in the project until 1994, for an average maize production of just over 2t/ha. These farmers today obtain maize yields roughly 20% lower and not significantly higher than that achieved in adjacent areas, not part of the project.

These data establish that financial analysis without recognition of diversity would have no value. Therefore, relevant data per farmer type was evaluated by re-analysing data from a previous project evaluation report (Bembridge et. al., 1982). Farmers were grouped into three categories, i.e. top, middle and bottom groups, on the basis of net farm profit per hectare. Farmers were also divided into

contractors and other participants. Minor discrepancies do not affect major trends and conclusions. Adapted data for the initial project is provided in table 6.2.21, while table 6.2.22 describes the data collected for farmer-types during the quantitative survey, after project termination, during 2000. Input costs were combined in one figure, as this is the format in which the data are available. These figures represent all direct costs, i.e. fuel, labour, mechanisation, seed, etc., adequate for this analysis.

Table 6.2.21: Maize enterprise input cost and output data for farmer groups for 1976-1980:

| | Ha-used | Input costs/ha* | Yield/ha | Average NFP | Livestock numbers** | Livestock cost/farmer | Livestock inc./farmer |
|---|---|---|---|---|---|---|---|
| Contractor top 1/3 | 30 | 235 | 3.2 | 2973 | 20 | 120 | 217 |
| Contractor middle 1/3 | 30 | 240 | 2.4 | -530 | 10 | 120 | 217 |
| Contractor bottom 1/3 | 30 | 254 | 2.4 | -2107 | 5 | 120 | 217 |
| Participant top 1/3 | 15 | 171 | 2.5 | 1793 | 10 | 60 | 105 |
| Participant middle 1/3 | 15 | 167 | 2.2 | 913 | 6 | 60 | 105 |
| Participant bottom 1/3 | 15 | 180 | 1.8 | -294 | 3 | 60 | 105 |

*costs calculated as percentage of income, obtained through a earlier analysis (Bembridge, et. al., 1982)
**Figure includes mostly cattle, but also some small stock, pigs and donkeys

Table 6.2.22: Relevant input cost and output performance data for the Sheila typology for 2000:

| | Ha-used | Input costs/ha* | Yield/ha | Average NFP/ha** | Livestock numbers** | Livestock costs**** | Livestock income | Livestock profit |
|---|---|---|---|---|---|---|---|---|
| Inactive landowners | 1 | 600.00 | 0 | -600 | 5.6 | 530 | 623 | 93 |
| Opportunists | 9 | 650.00 | 0.7 | -14 | 5.7 | 558 | 1 280 | 722 |
| Entrepreneurs | 40 | 850.00 | 1.5 | 365 | 7.9 | 1 049 | 1 574 | 525 |
| Commercialising | 75 | 1000.00 | 2.3 | 862 | 43.3 | 2 697 | 5 227 | 2 530 |

*Cost, determined with provincial agricultural economists, based on collected data
**based on maize price of 809.71 multiplied by yield for income, minus input cost
***Mostly cattle, with some small stock, pigs or donkeys, but based on cattle equivalents
***include fodder, lick vaccination, dipping, and other medicine-costs

Strictly speaking, the two scenarios described in table 6.2.21 and 6.2.22 cannot be compared directly: again emphasising the lack of a timeline of typology data. However, an interesting trend is obvious: during the 18 seasons of its existence, the project had average maize yields of 2.07t/ha. Currently, average maize yields at Sheila are 1.7t/ha, a drop of roughly 20%. In fact, only commercialising farmers (9%), currently perform at higher levels than the average achieved during the project's existence. If the arbitrary groups used in the ARDRI evaluation are viewed, all groups performed better than the average production today. Given the improvement in technology over the past 20 years, this entails a serious project failure in terms of sustainable development. Particularly disturbing is that both inactive landowners and opportunists are experiencing net losses in terms of agricultural activity during the season evaluated. This to an extent explains the current low cultivation levels.

Farmer type also results in significant differences in livestock numbers and performance as established in tables 6.2.21 and 6.2.22. Although both the ARDRI evaluation and this study questioned the livestock enterprise's viability given the size of most family herds and the lack of sufficient grazing at Sheila, small profits were recorded. Commercialising farmers that have sufficient animal numbers recorded a profit of roughly R2500 p.a. or R210 per month. This excludes managerial and labour costs.

Typology data for a number of years is required to facilitate cost benefit analysis with internal rates of return and cost/benefit ratios. The recently established scientific typology differs from the arbitrary grouping used previously, in terms of the number of types. A timeline of data is not available for the groupings established. Using assumptions to create performance data would only confirm what is already established - that groupings differ in performance. This makes direct comparison problematic, although the similar trends found substantiate the hypothesis of diversity as indeed correct. Farmer level analysis established beyond doubt that economic diversity and a typology exist in the area, with different types of farmers having various levels of access to inputs, leading to various levels of performance. Finally, in Table 6.2.23 the combined crop and livestock enterprise income 'without project' is compared with the combined crop and livestock enterprise income 'with the project'.

Table 6.2.23: Agricultural performance for individual farmers of the Sheila typology, during 2000:

| 'Without project' | | | |
|---|---|---|---|
| | **Livestock profit** | **Crop profit/loss/farmer** | **Total income** |
| **Inactive landowners** | 70 | -390 | -320 |
| **Opportunists** | 740 | 1 597 | 2 337 |
| **Entrepreneurs** | 1 400 | 14 175 | 15 575 |
| **Commercialising** | 1 200 | 30 971 | 32 171 |
| **'With project'** | | | |
| | **Livestock profit** | **Crop profit/loss/farmer** | **Total income** |
| **Inactive landowners** | 93 | -600 | -507 |
| **Opportunists** | 722 | -125 | -28 |
| **Entrepreneurs** | 525 | 14 583 | 15 109 |
| **Commercialising** | 2 530 | 64 675 | 67 205 |

During 2000 inactive landowners in both scenarios were unable to make a profit. Farmers of surrounding areas that did not participate in the project and are of the opportunist, entrepreneurs and commercialising farmer-type, were profitable in their livestock and crop enterprises, while only entrepreneurs and commercialising farmers that previously took part in the project were profitable.

From table 6.2.23 it is obvious that entrepreneurs of surrounding areas were slightly more profitable than entrepreneurs previously participating in the project. The implication is that except for the commercialising farmers, the project was actually financially detrimental to participants. These values for agricultural activity for the two scenarios prove that in financial terms, on a farmer level, initial project benefits were not sustainable.

#### 6.2.4.4 Project level analysis

While the analysis of the farmer budget provides an indication of the impact of the project on the individual farmer, it does not provide information on the effective allocation of funds spent to create the environment (the project) in which the farmer is operating. At this level, the project benefits and costs

of the agent (in this case the public service of Bophuthatswana and the NWC Co-operative) must be quantified.

An important step in this analysis is to categorise all direct benefits, direct costs (production and other allocatable costs), running costs (salaries, overhead and capital expenditure) and investment costs (infrastructure, mechanisation equipment, demarcation, etc.).

According to the NWC, capital investment in the project was amortised over five year periods. Exact figures for the first five years were used. It was stated with a previous analysis (Bembridge, *et. al.*, 1982) that the investment costs over the first five-year period would be repeated in consecutive five-year periods. Using this assumption, investment cost after the first five years therefore entails R80 525 p.a. for the 18 years that the project ran.

Another factor taken into account is loan capital. During the project lifetime, capital had been provided on credit. However, debt repayment was poor: For the 1981-1990 decade, R322 million was advanced at the Ditsobotla projects, of which roughly 60% was recovered, 20% was written off and 20% remained outstanding. Debt write-offs were regularly done, as in 1992 another R36 million were written off. During 1985, average 15 ha farm debt was R715/ha. Given the 3600 hectares involved in the greater Sheila project, this constitutes a debt of R2.7 million. It is assumed that 40% of all capital loaned was not recovered. Given the 1985 scenario, this constitutes a cost of R1.1 million over the 8-year period until the 1983/84 season. This entails a further annual cost (loan cost) of 135 000 p.a.

The opportunity cost for capital (realistic discount rate) was difficult to evaluate, due to a lack of uniformity. The determination of this parameter is intricate and beyond the scope of this study. Therefore the rate used in a previous analysis (Bembridge, et. al., 1982), based on the long-term loan rate offered by the Landbank (12%), is a realistic market related discount rate.

This analysis does not include the current value of infrastructure such as buildings. According to Gittinger (1982), these sunk costs incurred during an investment period were necessary, but cannot be retrieved as a residual value. It is therefore not an opportunity cost and not included in this analysis.

The results figure in table 6.2.24 for the total Sheila project. They represent the following statement:

Net benefits or present value = project benefits – project costs.

Incremental net benefit flow is subsequently calculated by subtracting all relevant costs from the net benefits. These incremental net benefit flows over the project years were converted into values that can be compared by discounting, allowing the taking into account of the time value of money. All values are discounted to the base year: 1995. The sum of discounted incremental net benefits provides net present value (NPV). The IRR as the discount rate where net present worth of costs is equal to net present worth of benefits, as well as the benefit-cost ratio, are also provided.

Table 6.2.24: Financial incremental net benefit, Benefit-Cost ratio, NPV and IRR, as determined for the Sheila project:

| Year | Profit maize | Livestock profit | Total with project income | Running cost (salaries, etc.) | investment cost (infrastr., mech.) | Loan cost (debt) | Total cost | Project net benefit | Real project benefit | Real without | Incremental net benefit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 175,597.52 | 11,079.71 | 186,677.22 | 20,000.00 | 288,253.00 | 44,062.50 | 352,315.50 | (165,638.28) | (1,762,109.31) | 786,496.88 | (2,548,606.20) |
| 1977 | 201,541.21 | 10,292.30 | 211,833.52 | 24,304.76 | 23,913.68 | 49,218.75 | 97,437.19 | 114,396.33 | 1,089,488.84 | 789,367.73 | 300,121.12 |
| 1978 | 261,328.04 | 9,781.04 | 271,109.08 | 33,815.47 | 15,057.51 | 54,375.00 | 103,247.98 | 167,861.10 | 1,447,078.45 | 902,650.64 | 544,427.81 |
| 1979 | 303,895.27 | 11,330.59 | 315,225.86 | 42,548.72 | 34,217.50 | 61,406.25 | 138,172.47 | 177,053.39 | 1,351,552.59 | 928,488.70 | 423,063.89 |
| 1980 | 303,550.49 | 17,674.86 | 321,225.35 | 49,142.86 | 92,622.82 | 69,843.75 | 211,609.43 | 109,615.92 | 735,677.34 | 848,544.62 | (112,867.28) |
| 1981 | 369,761.22 | 27,121.22 | 396,882.44 | 56,285.71 | 151,079.86 | 80,625.00 | 287,990.58 | 108,891.86 | 633,092.23 | 923,332.60 | (290,240.37) |
| 1982 | 381,088.38 | 21,506.83 | 402,595.21 | 63,428.57 | 170,252.43 | 92,343.75 | 326,024.76 | 76,570.46 | 388,682.53 | 802,676.20 | (413,993.67) |
| 1983 | 560,017.18 | 19,841.73 | 579,858.92 | 70,571.43 | 189,425.01 | 104,062.50 | 364,058.93 | 215,799.98 | 972,071.99 | 1,006,532.62 | (34,460.64) |
| 1984 | 544,234.43 | 26,678.50 | 570,912.93 | 82,285.71 | 220,868.02 | 115,781.25 | 418,934.99 | 151,977.94 | 615,295.32 | 902,964.72 | (287,669.40) |
| 1985 | 748,604.34 | 26,285.05 | 774,889.40 | 97,428.57 | 261,513.87 | 135,000.00 | 493,942.45 | 280,946.95 | 975,510.24 | 1,037,304.21 | (61,793.97) |
| 1986 | 818,990.23 | 33,589.06 | 852,579.29 | 113,142.86 | 303,693.53 | 159,843.75 | 576,680.14 | 275,899.16 | 809,088.43 | 969,543.77 | (160,455.33) |
| 1987 | 644,181.79 | 51,044.79 | 695,226.58 | 127,714.29 | 342,805.58 | 185,625.00 | 656,144.86 | 39,081.71 | 98,691.19 | 705,446.54 | (606,755.34) |
| 1988 | 463,548.59 | 62,187.27 | 525,735.87 | 146,571.43 | 393,421.17 | 209,531.25 | 749,523.84 | (223,787.98) | (500,644.25) | 493,181.49 | (993,825.74) |
| 1989 | 463,324.83 | 56,419.82 | 519,744.65 | 167,428.57 | 449,405.07 | 240,468.75 | 857,302.40 | (337,557.74) | (658,007.30) | 418,657.82 | (1,076,665.12) |
| 1990 | 613,300.87 | 47,872.18 | 661,173.04 | 193,142.86 | 518,426.33 | 274,687.50 | 986,256.69 | (325,083.64) | (554,750.25) | 449,338.38 | (1,004,088.62) |
| 1991 | 892,822.78 | 48,145.33 | 940,968.11 | 220,000.00 | 590,515.20 | 316,875.00 | 1,127,390.20 | (186,422.09) | (275,772.32) | 543,599.06 | (819,371.37) |
| 1992 | 677,389.64 | 50,010.29 | 727,399.93 | 241,428.57 | 648,032.91 | 360,937.50 | 1,250,398.99 | (522,999.06) | (679,219.55) | 373,935.98 | (1,053,155.53) |
| 1993 | 140,515.93 | 53,423.05 | 193,938.98 | 262,857.14 | 705,550.63 | 396,093.75 | 1,364,501.52 | (1,170,562.54) | (1,385,281.11) | 105,462.07 | (1,490,743.18) |
| 1994 | (88,789.55) | 97,414.43 | 8,624.88 | 285,714.29 | 175,822.92 | 431,250.00 | 892,787.21 | (884,162.33) | (961,046.01) | 42,271.28 | (1,003,317.29) |
| 1995 | 635,545.54 | 92,047.43 | 727,592.96 | | | | - | 727,592.96 | 727,592.96 | 304,956.01 | 422,636.95 |
| 1996 | 802,484.50 | 88,884.82 | 891,369.32 | | | | - | 891,369.32 | 829,952.81 | 338,314.09 | 491,638.72 |
| 1997 | 642,944.40 | 92,456.42 | 735,400.82 | | | | - | 735,400.82 | 630,703.96 | 261,921.20 | 368,782.76 |
| 1998 | 944,960.40 | 81,350.21 | 1,026,310.62 | | | | - | 1,026,310.62 | 825,273.90 | 328,869.15 | 496,404.75 |
| 1999 | 1,197,142.34 | 84,821.01 | 1,281,963.35 | | | | - | 1,281,963.35 | 977,851.53 | 385,571.23 | 592,280.30 |
| 2000 | 1,292,180.00 | 85,759.00 | 1,377,939.00 | | | | - | 1,377,939.00 | 984,242.14 | 386,407.14 | 597,835.00 |
| | | | | | | | | | | | **NPV = -3,115,971.84; B/C = 1.24; IRR = -14.40%** |

Initial investment cost was high, as infrastructure had to be developed. The project expanded during the early 1980s with loans in excess of R6 million being allocated annually. Benefits increased during the first few years of the project, but decreased significantly when the drought of the early 1980s took hold. Project cost rose progressively during the project's lifetime, as the loan capital not recovered impacted on the project. After 1994 when the project was terminated, no costs were engaged, resulting in more positive financial figures. However, a significant drop in participant number occurred since the early 1990s, as activities decreased.

Rainfall measured during the project's duration was similar to the long-term average of 500 mm/annum. Over the period an average area of roughly 6600 hectares was planted, with a mean yield of just over 2t/ha. The negative NPV of -R3.1 million; the benefit-cost ratio of 1.24; and the negative IRR of -14.40% illustrates that the project experienced financial difficulties, explaining its termination during 1994. Ironically this led to a significant improvement in farmer performance. Results are graphically illustrated in Figure 6.2.12. During the initial period of its chequered history the project was succeeding admirably, but after the drought of the early 1980s the project failed to deliver positive results when compared with a without-project scenario. A situation gradually developed where the majority was worse of than would have been the case without the project, especially as seen for the latter part of the project period.

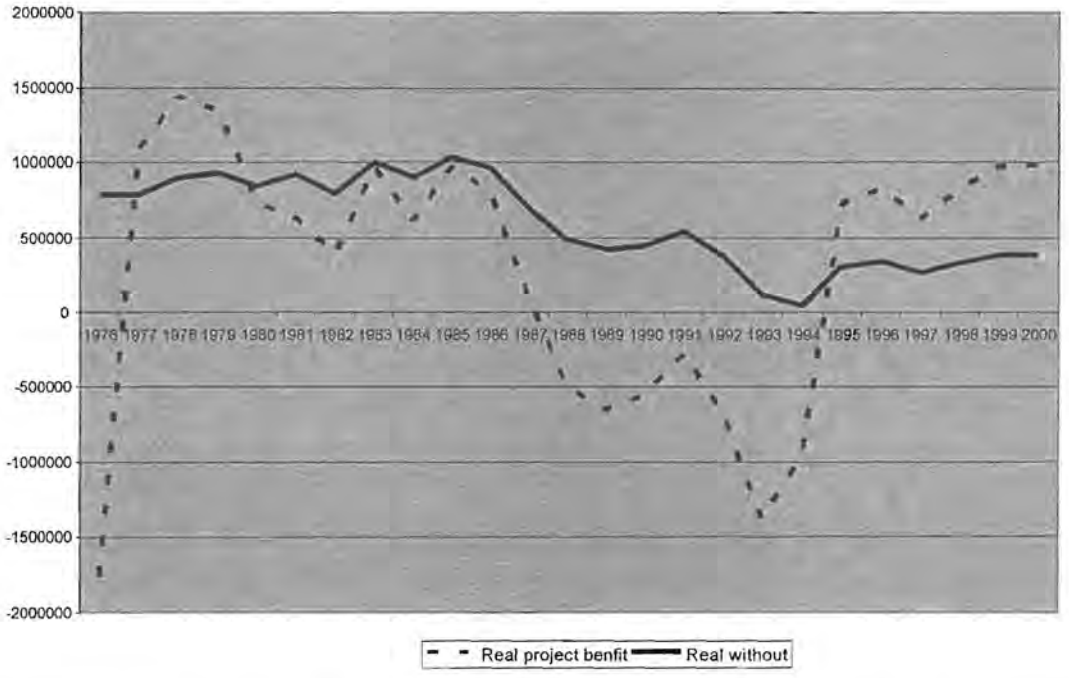



Figure 6.2.12: Financial project analysis (financial values – y-axis over time x-axis): Comparing with and without project scenarios at Sheila.

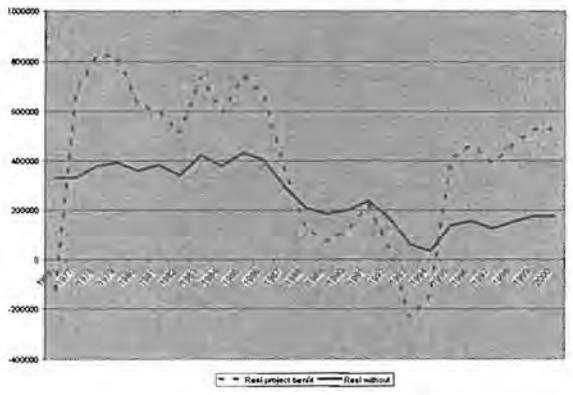
However, this does not provide the complete picture and an analysis of the various types of participants was subsequently done. Using data described in the farmer-level analysis, project benefits and costs were divided between the types in the typology, based on the respective farmer numbers, area planted and yields obtained. This resulted in four financial analyses, summarised in table 6.2.25.

Table 6.2.25: Financial analysis at the project level, for the farmer typology developed at Sheila:

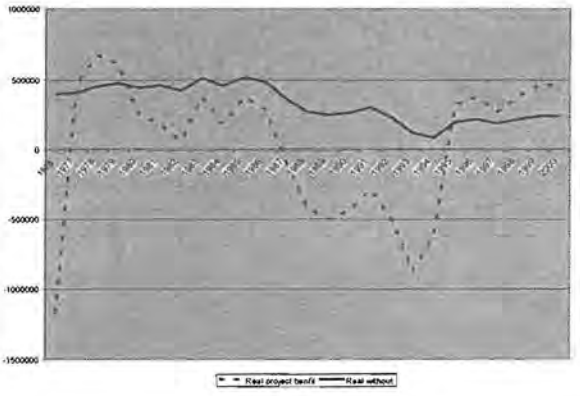
| Farmer type | Internal rate of return | Net present value | Benefit-cost ratio |
|---|---|---|---|
| Inactive landowners | -9.9% | -177 376 | 0.44 |
| Opportunists | n/a | -2 003 609 | 0.65 |
| Entrepreneurs | -22.9% | -2 690 614 | 1.02 |
| Commercialising | 81.1% | 1 216 983 | 1.41 |

The most obvious aspect from table 6.2.25 is that only the commercialising farmer type delivered positive IRR values. Even the entrepreneurs that took part in the project resulted in a slightly negative IRR value in terms of their contribution to the total project. In terms of NPV, again only the commercialising group had positive values. The cost-benefit ratios further illustrate the significant differences between the different groups, especially commercialising farmers and entrepreneurs when compared to opportunists and those inactive. The performance of the types of the Sheila typology is illuminated in Figure 6.2.13.

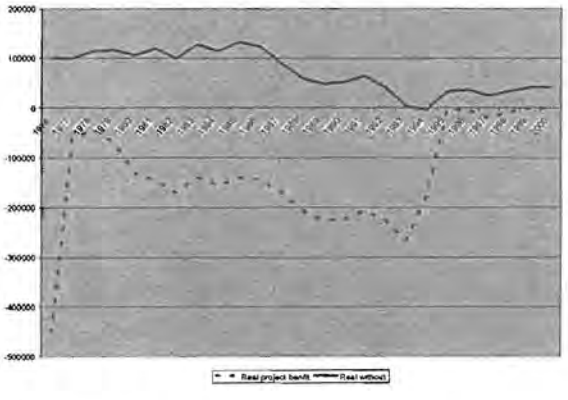
a) Commercialising farmers:



b) Entrepreneurs:



c) Opportunists:



d) Inactive landowners:

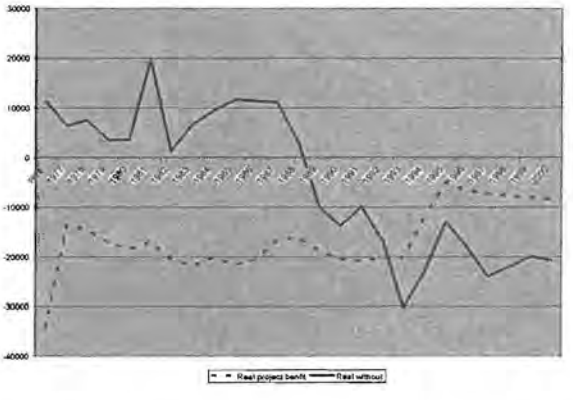


Figure 6.2.13: Financial project analysis (financial values – y-axis over time x-axis) on the basis of farmer types: Comparing with and without project scenarios at Sheila.

Participating commercialising farmers performed well, with negative values (real project benefits) obtained only during the last two years of the project, and generally still performing better than commercialising farmers not participating (without-project scenario). Participating entrepreneurs performed negatively from the late 1980s until the termination of the project, and for much of the period,

non-participating entrepreneurs (without project) performed better than their participating counterparts. Interestingly, participating opportunists at no stage outperformed non-participant opportunists. The result is that no IRR can be calculated for this group. These participants also never obtained positive financial values. Whilst participating inactive landowners only outperformed non-participating inactive landowners after project termination, these participants never obtained positive financial values (project benefits). In terms of recognising diversity, this financial project analysis again and convincingly, proves that the hypothesis stating that diversity must be described and dealt with.

#### 6.2.4.5 Economic Impact: efficiency analysis

##### 6.2.4.5.1 Shadow prices

To determine economic efficiency of resource use (valuing incentive, planning and management), benefits and costs are evaluated at prices that reflect the relative scarcity of in and outputs. This quantifies a project's contribution to the economy (Gittinger, 1982; Van Rooyen, et. al., 2002). There are valid reasons for accepting all labour and input prices at Sheila as such, i.e., as a true reflection of opportunity cost. Previous analysts also used this approach (Bembridge, et. al., 1982; Stilwell, 1985).

It is assumed that inputs were bought under competitive 'free' market conditions. Labour costs were also determined in a competitive market. The land involved was and remains to be state land. The value of land is related to the activity for which it is used, in this case, the without project scenario. As this is state land, it essentially does not have a market value. The opportunity cost of the land therefore is taken as the without project value.

Maize prices were shadow priced, as the market for maize was controlled at the time of the project, not reflecting true economic values. The world (fob) price (table 6.2.26) was used to obtain opportunity cost, thus calculating the real economic value of maize to the economy. From the traded price the transportation cost from the project to the point where the fob price is offered is subtracted, to obtain the shadow price of maize. The price information before 1982 was obtained from a previous analysis (Bembridge, et. al., 1982), while subsequent prices were obtained from the International Monetary Fund: primary commodity prices were sourced from [www.imf.org/external/np/res/commod/index.asp]:

Table 6.2.26: Maize; U.S. number 2 yellow, fob Gulf of Mexico: US Dollars per Metric Ton

| Year | $ price | Year | $ price |
|---|---|---|---|
| 1980 | 125.72 | 1988 | 106.95 |
| 1981 | 130.60 | 1989 | 111.37 |
| 1982 | 108.10 | 1990 | 109.28 |
| 1983 | 135.98 | 1991 | 107.47 |
| 1984 | 135.82 | 1992 | 104.21 |
| 1985 | 112.33 | 1993 | 102.04 |
| 1986 | 87.79 | 1994 | 107.78 |
| 1987 | 75.52 | | |

Adjusting fob prices by transport charges between the farm gate and the point where the cif/fob price was quoted would result in 'real' or shadow prices. Stakeholders in the agricultural industry were contacted for information regarding import parity prices for maize. The NWC, SAGIS, Grain-SA and others were asked for information regarding costs concerning transport, insurance, port charges, taxes, storage, loading, fumigation etc., for the period 1980-1994, to accurately access shadow prices. However, no organisation could provide information for that period. An assumption was therefore made regarding these costs. According to the ARDRI analysis (Bembridge *et. al.*, 1982), marketing and transport costs varied between R25.00 and R34.75 for the first four years of the project, for an average cost of R27. From this, an average conversion factor of 0.96 was established. Locally determined maize prices are therefore adjusted by the conversion factor to determine shadow values for the project period.

#### 6.2.4.5.2 Economic analysis at farmer level

The economic farmer level analysis (illustrated in table 6.2.27) does not vary extensively from the results obtained in the financial analysis. Profits are slightly lower or losses slightly higher. Considering that only the maize price, for the initial project period was shadow priced, this is to be expected.

Table 6.2.27: A summary of the economic analysis of participating farmer groups at the Sheila project.

| **With project for top, middle and bottom groups: – 1976-1980** | | | | |
|---|---|---|---|---|
| | Input costs/ha | Income/ha | Profit/loss/ha | Livestock profit |
| Participant bottom 1/3 | 179.66 | 159.43 | -20.23 | 44.88 |
| Participant middle 1/3 | 167.31 | 219.04 | 51.73 | 44.88 |
| Participant top 1/3 | 171.47 | 279.39 | 107.92 | 44.88 |
| Contractor bottom 1/3 | 253.73 | 236.54 | -17.19 | 97.50 |
| Contractor middle 1/3 | 239.73 | 286.79 | 47.06 | 97.50 |
| Contractor top 1/3 | 234.66 | 381.31 | 146.65 | 97.50 |
| **Without project scenario for the Sheila typology – 2000** | | | | |
| | Input costs/ha | Income/ha | Profit/loss/ha | **Livestock profit** |
| Inactive landowners | 600.00 | 404.86 | -195.14 | 70.00 |
| Opportunists | 650.00 | 809.71 | 159.71 | 740.00 |
| Entrepreneurs | 850.00 | 1416.99 | 566.99 | 1400.00 |
| Commercialising | 1000.00 | 1619.42 | 619.42 | 1200.00 |
| **With project scenario for the Sheila typology – 2000** | | | | |
| | Input costs* | Income/ha | Profit/loss/ha | **Livestock profit** |
| Inactive landowners | 600.00 | 0 | -600.00 | 92.74 |
| Opportunists | 650.00 | 566.80 | -83.20 | 722.07 |
| Entrepreneurs | 850.00 | 1214.57 | 364.57 | 525.18 |
| Commercialising | 1000.00 | 1862.33 | 862.33 | 2529.81 |

#### 6.2.4.5.3 Economic analysis at project level

Economic project level analysis includes the corrections to include the shadow price of maize.

Table 6.2.28: Economic incremental net benefit, Benefit-Cost ratio, NPV and IRR, as determined for the Sheila project:

| Year | Profit maize | Livestock profit | Total with project income | Running cost | Investment cost | Total cost | Project net benefit | Real project benefit | Real without | Incremental net benefit |
|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 161,484.24 | 11,079.71 | 172,563.94 | 20,000.00 | 288,253.00 | 308,253.00 | (135,689.06) | (1,443,500.59) | 730,288.37 | (2,173,788.96) |
| 1977 | 185,520.73 | 10,292.30 | 195,813.04 | 24,304.76 | 23,913.68 | 48,218.44 | 147,594.60 | 1,405,662.84 | 732,247.73 | 673,415.12 |
| 1978 | 241,845.99 | 9,781.04 | 251,627.03 | 33,815.47 | 15,057.51 | 48,872.98 | 202,754.05 | 1,747,879.76 | 839,775.55 | 908,104.20 |
| 1979 | 280,503.46 | 11,330.59 | 291,834.05 | 42,548.72 | 34,217.50 | 76,766.22 | 215,067.83 | 1,641,739.17 | 861,639.77 | 780,099.40 |
| 1980 | 277,965.40 | 17,674.86 | 295,640.26 | 49,142.86 | 92,622.82 | 141,765.68 | 153,874.59 | 1,032,715.34 | 784,260.66 | 248,454.68 |
| 1981 | 340,190.09 | 27,121.22 | 367,311.30 | 56,285.71 | 151,079.86 | 207,365.58 | 159,945.73 | 929,917.02 | 858,968.82 | 70,948.20 |
| 1982 | 348,656.44 | 21,506.83 | 370,163.28 | 63,428.57 | 170,252.43 | 233,681.01 | 136,482.27 | 692,803.41 | 741,043.86 | (48,240.45) |
| 1983 | 518,154.14 | 19,841.73 | 537,995.88 | 70,571.43 | 189,425.01 | 259,996.43 | 277,999.44 | 1,252,249.73 | 935,936.68 | 316,313.06 |
| 1984 | 501,999.49 | 26,678.50 | 528,677.99 | 82,285.71 | 220,868.02 | 303,153.74 | 225,524.25 | 913,053.64 | 838,950.43 | 74,103.21 |
| 1985 | 694,516.15 | 26,285.05 | 720,801.20 | 97,428.57 | 261,513.87 | 358,942.45 | 361,858.76 | 1,256,454.02 | 966,995.04 | 289,458.98 |
| 1986 | 758,341.27 | 33,589.06 | 791,930.33 | 113,142.86 | 303,693.53 | 416,836.39 | 375,093.95 | 1,099,982.25 | 902,959.60 | 197,022.65 |
| 1987 | 589,254.43 | 51,044.79 | 640,299.22 | 127,714.29 | 342,805.58 | 470,519.86 | 169,779.35 | 428,735.74 | 653,519.27 | (224,783.52) |
| 1988 | 412,435.63 | 62,187.27 | 474,622.91 | 146,571.43 | 393,421.17 | 539,992.59 | (65,369.69) | (146,240.92) | 450,373.44 | (596,614.35) |
| 1989 | 405,599.61 | 56,419.82 | 462,019.43 | 167,428.57 | 449,405.07 | 616,833.65 | (154,814.22) | (301,782.10) | 376,531.82 | (678,313.92) |
| 1990 | 545,095.58 | 47,872.18 | 592,967.76 | 193,142.86 | 518,426.33 | 711,569.19 | (118,601.43) | (202,391.52) | 405,764.88 | (608,156.40) |
| 1991 | 807,952.38 | 48,145.33 | 856,097.71 | 220,000.00 | 590,515.20 | 810,515.20 | 45,582.51 | 67,429.75 | 496,597.58 | (429,167.82) |
| 1992 | 597,859.40 | 50,010.29 | 647,869.69 | 241,428.57 | 648,032.91 | 889,461.49 | (241,591.80) | (313,755.58) | 335,268.71 | (649,024.28) |
| 1993 | 77,578.33 | 53,423.05 | 131,001.38 | 262,857.14 | 705,550.63 | 968,407.77 | (837,406.39) | (991,013.48) | 77,578.04 | (1,068,591.52) |
| 1994 | (146,768.43) | 97,414.43 | (49,354.00) | 285,714.29 | 175,822.92 | 461,537.21 | (510,891.21) | (555,316.53) | 18,678.24 | (573,994.77) |
| 1995 | 543,242.78 | 92,047.43 | 635,290.21 | | | - | 635,290.21 | 635,290.21 | 270,400.55 | 364,889.65 |
| 1996 | 691,866.90 | 88,884.82 | 780,751.72 | | | - | 780,751.72 | 726,956.91 | 299,755.43 | 427,201.48 |
| 1997 | 529,746.36 | 92,456.42 | 622,202.78 | | | - | 622,202.78 | 533,621.60 | 225,576.40 | 308,045.20 |
| 1998 | 816,939.60 | 81,350.21 | 898,289.82 | | | - | 898,289.82 | 722,330.18 | 290,330.03 | 432,000.16 |
| 1999 | 1,053,148.74 | 84,821.01 | 1,137,969.75 | | | - | 1,137,969.75 | 868,016.59 | 344,452.23 | 523,564.36 |
| 2000 | 1,137,696.80 | 85,759.00 | 1,223,455.80 | | | - | 1,223,455.80 | 873,897.00 | 345,097.14 | 528,799.86 |
| | | | | | | | | | | **IRR = -5.98%, NPV = -416,651.18, B/C = 1.18** |

As found with the financial analysis, positive economic values (project benefits) were obtained during the early 1980s, but these decreased during the drought of the early 1980s, although remaining positive until the late 1980s (also see figure 6.2.14). Negative values were obtained until the project was terminated, when positive values were again, ironically, obtained for those that previously took part in the project.

Whilst the trend is similar to that established in the financial analysis, net project values are somewhat higher. Whilst the financial NPV was -R3.1 million; the benefit-cost ratio 1.24; and the IRR -14.40% the economic NPV was roughly -417 000, the B/C ratio 1.18 and the IRR –6%. A group-based economic project analysis as with the financial analysis is not reported, but exactly the same trend is evident.

Although these results are slightly better than those obtained with the financial analysis, it still illuminates the economic problems that were generated by the project as a whole. Again, although at times the project showed very positive results and promise, it failed to deliver sustained positive results. Eventually the majority was worse off than would have been the case without the project.

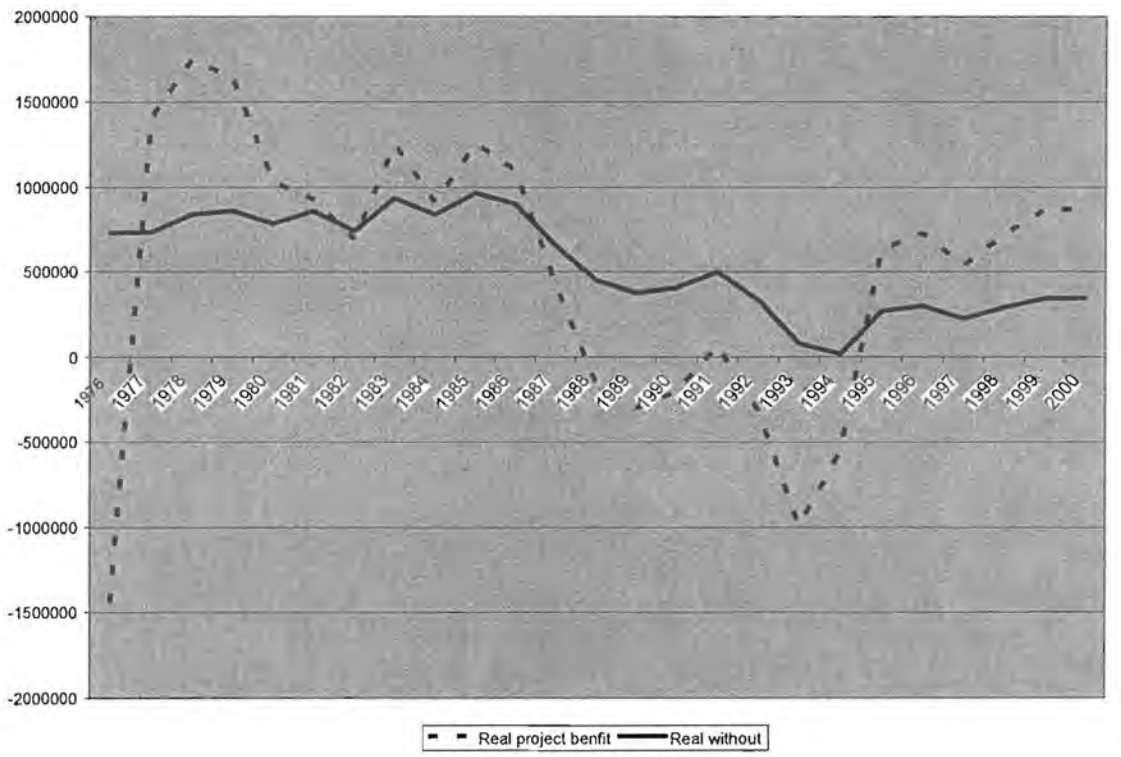



Figure 6.2.14: Economic project analysis (financial values – y-axis over time x-axis): Comparing with and without project scenarios at Sheila.

### 6.2.4.6 Conclusion:

Given the results of the financial and economic analysis, the one aspect that stands out is that project benefits did not exceed project costs. Therefore the essence of the analysis is that effectively the Sheila project did not entail a profitable investment, advantageous to the economy of Bophuthatswana or the region. The crux of analysis of the project is that the majority of farmers failed to produce positive net farm income, while the project as a whole also performed disappointedly. In essence, the project costs exceeded project benefits, rendering the project a failure in terms of the investment made.

Analysis indicated particularly large coefficients of variation for yield, gross income and total cost. This indicates widespread inequalities in income. Distributional (equity) issues were of major importance and negative perceptions resulted from the range of incomes achieved, despite uniform application of technology and management. This resulted from a lack of attention to economic diversity within the community. Because these differences were not specifically addressed, equity was not achieved.

Furthermore, the lack of skills transfer in terms of financial management resulted in large discrepancies between actual and perceived income. Most farmers were ignored to the economic realities of the crop farming enterprise. This constitutes a failure to reconcile technological and social realities.

A cynical view could be that empowerment and development was hampered by the political system of the time. Although it is partly true that a good project from bad policy is unlikely, the fact remains that the design criteria were not recognised at Sheila. Technical change was not reconciled with the social reality of most of the participants and diversity was not addressed. Whilst stakeholder linkages were facilitated, co-ordination between stakeholders was not optimal and communication was lacking. Especially in terms of skills development (HCD) and participation project management failed to perform.

Although not analysed, it can safely be assumed that the performance of the project would have been significantly enhanced if these aspects got the attention they deserved. The history of development described in chapter two supports the notion that sustainable development can be expected when participants are empowered to participate, where skills are sustainably transferred and where individuals benefit economically. Although the political change of the early nineties meant a severe decrease in direct and indirect subsidy of the project, these subsidies were in any case not sustainable. A more sustainable alternative during the time would have included a focus on Human Capital Development, in terms of both technical and financial management skills. In this manner the project would have been shifting responsibility to participants, whilst different options for the different farmer types would have bee identified and explored.

## 6.3 Indirect project impact

The true value of a project should be measured in terms of its contribution to the total economy (Van Rooyen, 1983). Indirect effects, particularly in the Sheila area could therefore provide a significant indication of project impact. These impacts include those stemming from (forward) and induced by (backward) linkages with other sectors in the economy, e.g. more activity in supplier and processor sectors. The direct contribution of agriculture to the economy of an area can often safely be doubled to determine the indirect contribution to that area, due to employment and production multipliers (Van Rooyen & Machete, 1991). These multipliers are the result of increased employment and income earnings due to linkages, i.e. forward and backward interactions between economic sectors. Indirect impact therefore includes employment creation and other spillovers, entailing quantifiable and non-quantifiable (intangible) effects such as changes in quality of life and attitude.

The way in which the Sheila project impacted on employment, spending, health and other tangible effects, as well as on intangible effects such as rural life, state of mind, confidence etc. is discussed in this section. Most of the information discussed is of a qualitative nature, originating from the qualitative part of the study, through engagement with farmers and other stakeholders in the area.

### 6.3.1 Spillovers and linkage impacts

Three major types of spillover can usually be identified, namely: economic spillover, technological spillover, and knowledge spillover (Anandajayasekeram *et. al.*, 1995). Economic spillover refers to the price effects from increased production. Within the regional context, this spillover affected regional production, consumption, trade and prices. Although not directly determined, key interviews revealed that profits generated through the project had a broad effect, both within and outside the direct project area. As the financial status of participants changed, a significant portion of profit was invested in the community, through expenditure. This took the form of especially improved housing and education. As illustrated in the description of the target population (6.2.2), housing and infrastructure in particular, is of a superior quality in the northern parts the Ditsobotla district, when compared with adjacent districts of the previous homeland.

A significant number of employment opportunities were also created due to the Sheila project. Apart from many direct job opportunities as employees, many less formal activities took place, especially around the cultivation process, i.e. weeding, harvesting, etc. Traders and businessmen in the area also expressed their satisfaction with the project, as they perceived a significant improvement in turnover or transactions (Bembridge, *et. al.*, 1982; Stilwell, 1985).

Technological spillover refers to the spillover of technology from one area to another. This has certainly happened through the Shiela project. Also in terms of knowledge spillovers; the methods used by farmers and market agents to cultivate, harvest, store, process, handle and transport crops, had wide applicability in the erstwhile Bophuthatswana. This also included the organisational models

and institutional strategies for project planning, training, etc. Many of these methods and procedures are today institutionalised in neighbouring areas and even further.

The project also induced changes in the availability of resources, contributing to efficiency. Through the co-operatives, farmers were exposed to a variety of products, especially agricultural inputs. Farmers from Sheila are more discerning and knowledgeable with regard to fertiliser types and cultivars than farmers in districts where projects were absent. Although financial constraints hampered the use of modern technology, the cultivation process introduced at Sheila spread to many areas, particularly in the Ditsobotla district.

Intangible benefits and costs, more difficult to quantify and allocate a money value to, were also encountered: these included benefits such as an improved quality of life and improved confidence. Although more recently the economic situation has deteriorated somewhat, due to the lack of production and economic hardship, the community is clearly still better off in terms of quality of life than most other wards and districts in the province. Previous analyses (Bembridge *et. al.*, 1982; Stilwell, 1985) also established that the project community had a significantly higher quality of life than neighbouring areas. This still holds true today and includes better overall health due to an improved self-sufficiency in food production and a related reduced infant mortality. Housing in the area is also significantly better than that found in other parts of the district, as well as in other districts. Also in terms of the water reticulation and electricity network, the Sheila area is better off, as also evident from the description of the target population.

The improvement in roads and transport (due to the fact that more people could afford vehicles) also increased mobility and led to exposure to other communities and people, which was limited before the project. This also increased the confidence of participants who felt that they had achieved something and could interact with other communities. The confidence level of farmers in the area is clearly higher than in other areas where this researcher worked. Confidence did not only originate from the exposure to technology and the ability to utilise this, but also from the exposure to the administrative processes and the opportunities for public expression through the local farmers' forums. It can also be attributed to the exposure these farmers had to training and interaction with other stakeholders.

For the most part, better nutrition had a positive impact on the health situation, but the fact that the housing and water distribution network were significantly improved, also contributed to this positive impact. The increased self-sufficiency in terms of food production not only contributed to increased confidence and health, but also to more purchasing power and better overall living standards. Although HCD was neglected, the attitude towards the project and its influence on rural life was generally very favourable.

All indirect impacts were not positive. Some participants and non-participants perceived that substance abuse (particularly alcohol) increased as a result of the accruement in disposable money. Some of the elderly people and traditional leaders further perceived that the youth in particular was prone to be less respectful to their elders, while crime was also perceived to have increased. In

particular it was perceived that theft of both crop and livestock products became a more frequent phenomenon.

Another impact that can be viewed as negative, especially by some of the farmers, is that livestock numbers have decreased significantly, mainly due to the fact that less area became available for grazing. However, this enterprise has repeatedly been proven not to have a significant economic benefit.

As described in previous sections, the input suppliers and output buyers definitely benefited from the increased production. While many farmers often did not make a profit, these stakeholders gained significantly throughout the project life.

Non-participants, including teachers and traditional leaders, etc., were in general also positive about the project. Various traders perceived that the additional income in the area increased their turnover. Most non-participants viewed the project as progressive, with various favourable spin-offs such as increased economic activity, more trade, better transport, etc. To some extent, the perception is that people in the area feel that the project exposed the community to the outside world and 'put them on the map'. A particular benefit mentioned by this group was that the project brought significant knowledge and skill to the area.

The local traditional leadership was in general also positive. Some traditional leaders and teachers in the area were also landowners and therefore participants in the project. Recent discussions with farmer groups also illustrated this, as headmen were vocal in their support of efforts to revive the project. Although they obviously felt particularly strongly about protecting the land tenure status quo, the project "teaches our people how to use resources". For the most part traditional leaders did not feel threatened by the project, probably because the land tenure system used is at least partly recognising their role, although they stated that the perceived increase in crime was a worry to them.

It is clear that despite the extensive criticism that these studies levelled at the project, significant indirect impacts, mostly positive, were encountered. However, if the design criteria developed during this study could have been applied, these indirect effects would probably have been more significant.

### 6.3.2 Environmental impact assessment

Several types of environmental impacts could potentially be distinguished: the first being on-site market impacts. These impacts affect only on site, do not have downstream effects and can be evaluated using conventional markets. To evaluate this environmental impact, a description of the Sheila area is appropriate. The area is relatively flat with no mountains or hills. No permanent surface water is evident but underground water resources are extensive and reliable. Winds are predominantly north-westerly. Average annual rainfall varies between 500 and 600 mm. The area predominantly has deep, red plinthic catena soils, suitable for crop production. These pedal soils are sandy loams of the forms Avalon, Bainsvlei, Clovelly, Glencoe, and Hutton- ideal for crop production.

A relevant example of on-site environmental market impact would be soil degradation, entailing the loss of nutrients when farming systems do not adequately replenish the nutrients used. These effects are specific to the site affected and affect soil productivity. These impacts are reflected in yield losses and can be valued using the market prices for the relevant crops. This impact is evident at Sheila: the generally low nutritional status of the Sheila soils is of concern, as it affects yield and therefore profit. However, farmers have for most of the project's life, fertilised sparingly. This of course neutralised any negative impact from long-term over-fertilisation. Soil surveys do not indicate any undue high levels of minerals, and the opposite is in fact true. The soil status is relatively poor with very low levels of the main elements; nitrogen and phosphorus. In terms of phosphorus the soil status in the area is ± 6.4mg/kg in comparison with 25.5mg/kg in the neighbouring, commercial Lichtenburg area (personal communication: L Letshwiti; Soil Scientist, TSS, NWDACE). This has a negative impact on production and on soil microbes. Soil structure would in the long term also be affected. Most scientists do however perceive the process to be reversible. But the low nutritional status has definitely impacted negatively on the production potential of the land. Given the financial status of most farmers, as well as the fact that the tenure system does not encourage sharecroppers to invest in land to which they only have temporary access, the problem was exacerbated.

The soil-pH or acidity as measured in soil surveys is generally acceptable as most of these soils have a lime-presence in the underground. As soil-acidity could become a problem with long-term high fertiliser rates, this is again not a concern at Sheila.

In general, soil erosion at the project area is negligible, mainly because of the topography, the stable soil structure and the absorbing soil texture, which limits significant water erosion. However, as the majority of soils have a low clay percentage, they are to some extent subject to wind erosion. During the spring strong north-westerly winds are often evident in the area. Some wind erosion occasionally takes place where lands are ploughed early in spring. Given the fact that optimal planting occurs late in November and often takes place later, wind erosion was not a significant problem. Farmers most often prepared their lands after the strongest winds had decreased somewhat.

No other significant environmental impact is evident at the Sheila site. One could argue that some loss of biodiversity was experienced due to land cultivation, but given the potential of the land and the need for it to support the local communities; this is a trade-off that had to be made. With regard to off-site effects, concerning individuals and communities downstream from where the project took place, no significant impact can be distinguished. No downstream silting up of reservoirs or rivers or a reduction in water storage capacity is evident. In the same vein, no significant atmospheric or other pollution resulted from the agricultural activity.

## 6.4 Application of the systemic impact analysis framework

The chapter concludes with a systemic impact assessment of the project as described in this section. It uses the decision rules developed by the DBSA as basis for analysis and deals with questions regarding institutional, effectiveness, financial and economic, social and indirect impacts. As described in Chapter 4.5 this framework accommodates important operational and political considerations. It focuses on common ground between stakeholders, financing, financial and economic viability. There are similarities with the design criteria developed during this study, as discussed in chapter two. The framework guides project analysis through a sequence of questions designed to raise issues in a logical manner. The first eight questions deal with more robust macro issues while the last three questions deal with specific project appraisal in somewhat more detail:

(i) Question 1 asks if there was a 'fit' between the objectives of the major participants. There is no record of disagreement between the major parties; the participants, the public service of Bophuthatswana, NWC and later Agricor. However, it was established that the objectives of the participating farmers were not addressed. Especially in terms of divergent objectives for different types of farmers, no alternatives were provided. As described in section 6.2.1.4, participants who had serious questions regarding project management, were overruled by the farmer's committee, consisting of their peers. Although farmers were in favour of the project, the mechanisms used were not always well received. The implementation process was not transparent and participants were not engaged in decision making. Committee members did not express concerns, but also had no real decision-making powers. Farmers in general, perceived the project as paternalistic, but did not complain openly, as they perceived this as potentially detrimental to the future of the support the project offered. Clearly communication regarding the objectives of the different stakeholders was not optimal. Whilst NWC was running the project, this was done relatively independently, with little interaction with other stakeholders. The perception formed from key-interviews and the literature (Bembridge, *et. al.*, 1982; Stilwell, 1985; Francis, 1999) was that although intentions were mostly honourable, the NWC and Agricor could be perceived as too focused on target sales, while the politicians only focused on showing the independence of Bophuthatswana as a net food producer. It can be argued that the objectives of the service provider were the priority. In the process farmers and eventually project sustainability suffered.

(ii) Question 2 deals with a policy 'fit'; Was the project in concurrence with the national policies of the time? The answer to this question would be yes. Bophuthatswana, through its executive powers took interest in the project, while the government of the RSA was also interested in the success of the endeavour. The project's main aim from the perspective of the politicians was to obtain self-sufficiency in food production for Bophuthatswana. One can however argue that the agricultural policies of the time, although much less focused on empowering communities and individuals, also had as aim the creation of an independent farmers' class. This 'fit' did in practise not materialise. However the project did fit the stakeholders' interpretation of policy and in terms of operational issues no major differences were experienced.

(iii) Question 3 deals with a programme 'fit'. The project did fit the development programmes of the time to a large extent, as capital-intensive, centrally managed projects were popular in most developing countries during the late seventies. The project was one of the first to take place in Bophuthatswana, but projects in neighbouring countries influenced the development programmes of the region. The concept was acceptable to all stakeholders, initially promoting linkages and co-operation. Although there is no official record of the project forming part of a broader, integrated rural development programme, there is evidence of broader planning and implementation. Infrastructure was developed while school and clinics were built in the area. However, no HCD programme was developed or implemented and no diversified approach to cater for different farmer types was ever implemented.

(iv) Question 4 asks if there was evidence of market or government failure, as a project should intervene in the economy where such failures exist. As input and output market prices in the maize industry were regulated, market failure was evident. With regard to government failure the answer again has to be yes. The results from the economic analysis and the subsequent extensive transformation of specifically agricultural policy indicate that the policies and support systems of the time were inherently seriously flawed. In attempting to rectify market and government failures, the project could be interpreted as addressing these issues: During the 1970s and 1980s the agricultural market was inaccessible to the small-scale farmers of the Sheila area, due to the political (policy) system as well as market regulations. The project facilitated access to resources and services and provided opportunities to commercially-inclined farmers. As diversity was not recognised, opportunities for the small-scale sector in general were created, but in an inefficient manner.

(v) Question 5 deals with the appropriate institution to finance the project. The NWC as well as Agribank financed the Sheila project. Agribank was a parastatal, affiliated to the Bophuthatswana Department of Agriculture. Guarantees for these funds were provided by Bophuthatswana Government. While there could be no objection to a private institution financing a project, the fact that NWC provided finance as well as input and output markets, might constitute a conflict of interest. However, whilst NWC had a clear profit-motive, Agribank was perceived by former project managers and the public, as being too liberal in its funding policy. The fact that farmers could apply for loans on an annual basis, often whilst defaulting on previous loans, contributed to the large debts incurred. It could also be argued that NWC was not strict enough in its financing policy, as they were assured of making a profit through the rigid input supply policy and assured output markets, as well as the guarantees provided. By the same token Agribank was not averse to supplying loans, even to high-risk farmers, as these loans were guaranteed by the state. Furthermore, the fact that there was extensive political pressure for the project to succeed, apparently contributed to the situation where credit was relatively cheap. The ease with which debt was repeatedly written off, illustrates a lack of fiscal discipline. Whilst the public sector could in principle fund initial operational/recurrent development costs, e.g. salaries, etc., these costs should eventually have been covered by the project. In any event, partnerships with finance institutions (Agribank) and the private sector (NWC) should have been addressed with more

circumspection. The levels of cost recovery from beneficiaries were not appropriate and did not contribute to install the principles of sound financial management in farmers. The level of credit-subsidisation did not prepare farmers for a free market scenario. This contributed to the current situation where most of the farmers with real farming skills are struggling with debt.

(vi) Question 6 appropriately asks who "owned" the project. From the evidence presented, only 6-10% of landowners were involved in the project at any stage, mostly as employees. It must therefore be concluded that farmers did not take full ownership of the project at any stage. The project was initiated after limited consultation with farmers. Although farmers were generally in favour of the project, they perceived it as paternalistically driven. Participation was minimal, with only a small group of progressive farmers being active. The project management team, together with paid employees, mostly farmed on behalf of the beneficiaries. This was supported by the target group, as most landowners were actually not farmers, satisfied with receiving the benefits. However, the lack of empowerment and lack of ownership taken is evident in the lack of agricultural activity and skill in the area today.

(vii) Question 7 deals with the distribution of benefits and costs: it is clear that although all stakeholders incurred costs, the North West Co-operative was more than adequately reimbursed through its profitable facilitation of input and output markets. The public institutions involved also incurred costs, and the record shows that significant amounts were never recovered. Although it could be argued that the benefit did go to the farming community, as part of broader society, this was done inefficiently, with significant cost to the taxpayer. Equity was not achieved. As established with this study and preceding studies, diversity within the community is extensive, leading to different levels of success. More entrepreneurial farmers benefited significantly, while less equipped farmers were not catered for and eventually did not succeed. This strongly suggests that a multi-faceted approach, based on diversity within the agricultural community, should be investigated. This failure to deal with diversity led to most of the direct benefits not being sustainable, as many landowners are today in a similar position as before the project was initiated. Although secondary players such as the NWC should also have gained, it is the target group that should predominantly have received benefits. This was not the case.

(viii) Question 8 deals with financial affordability. According to this study, the project was initially financially affordable. Especially during the first five years, financial cost-benefit ratios of higher than 1.4 were achieved. Budgetary provisions were in place and project participants, borrowers, and the state were in a position to sustain the operation and maintenance of the project. However, the project was eventually terminated during 1994 as a result of financial difficulties. Investigations into allegations of corruption and mismanagement have been conducted but the outcome of these is not publicly known.

(ix) Question 9 deals with economic efficiency. According to the result of this study, the project was not economically viable and economic benefits did not exceed economic costs. Whilst a variety of reasons could be forward for this situation, as described in section 6.2.4.6, a main

constraint was the lack of participation and ownership of the beneficiaries. This again can be attributed to the fact that the objectives of the farmers were not recognised and diversity within their group not dealt with. The lack of sound linkages between the stakeholders also resulted in a lack of control, which negatively affected financial discipline, both from the farmers, and the supporting organisations, especially NWC and Agricor. The political system and the lack of an effective empowerment policy also had an impact on the lack of sustained efficiency.

(x) Question 10 deals with general sustainability of project benefits. The project has to be evaluated in terms of financial, technical, institutional, environmental, social and political sustainability. Fair benefit distribution is required to ensure that equity considerations are met and that the project is sustained through participation. It is here where the project failed to a large extent. Financial benefits were reasonable, especially during the initial part of the project. However, the project particularly failed in terms of economic sustainability, due in a significant degree to lack of attention to diversity. Environmentally, the project was sustainable as no significant negative impacts were encountered. In terms of social sustainability, the project again failed. Diversity was not recognised and technical innovations did not recognise social reality. The fact that the mechanisation services were not maintained, and that a very limited capacity for this exists in the community, is a case in point. While a high input technical approach was used, this is no longer practised. As the political environment has altered significantly, the point of political sustainability is actually moot. Clearly the political foundations of the era were not sustainable. Adaptations focused on participation, HCD and transparent processes have also not been institutionalised.

(xi) Question 11 asks if the project was the "best" alternative in terms of the set objectives. Although it is difficult to evaluate that 26 years after initiation, the project proposal and the philosophy behind it, which actually aimed at empowerment and participation, cannot be faulted. The project was potentially a solution to the identified problems, although implementation of the project was certainly sub-optimal. Especially in terms of the project design criteria identified through this study, more focus on participation, recognition of different farmer types and appropriate technologies was needed. However, the political pressures, as well as the diversion towards target yields and a neglect of HCD, caused a shift away from the initial aim of the project. If the project was implemented as planned, and if the design criteria were recognised, the result might have been different.

According to this evaluation, the project had potential to support the establishment of independent farmers, to focus support and to provide access to services and inputs. The philosophy and objectives were sound, whilst the institutions involved were also well suited for the project. However, implementation was not effective, especially in terms of establishing ownership and real participation. With regard to the design criteria, linkages were mostly ineffective with limited communication and empowerment. Economic diversity was also not addressed, as no differentiation was made in support measures for the various farmer types present in the area. However, given the potential of the approach to focus support and access to services and inputs, it is crucial that the lessons of the past, as distilled into the design criteria, are implemented in future ventures of this nature.

## 6.5 Conclusions

This study constituted the third extensive impact assessment of the Sheila project. The project gripped the attention of many involved in development (Seobi, 1980; Bembridge et. al., 1982; Rood, 1983; Stilwell, 1985; Cuthbert, 1993; Stacey *et. al.*, 1994; Francis, 1998 & 1999). All these investigations established that the project had potential, but most concluded that farmer capacity needed to be developed further. This study was initiated during 1997 and entailed a combination of quantitative and quantitative procedures, also constituting an analysis of the policies in South Africa and Bophuthatswana before democratisation. Statistical analysis entailed various phases, focused eventually on a typology for the Sheila ward.

The project commenced during 1976/77 with a contractor system and as objectives improved utilisation of land, selection and training of farmers and increased production. Lands were cultivated as a unit while cost division and profits were calculated in the extension office. The NWC, in collaboration with the Bophuthatswana government, was profitably involved as input provider and market agent. Training was sporadic and insufficient. Local drive, management and initiative, were mostly missing. Effectively, from the inception of the projects, the majority of land right holders ceased to farm. The project expanded until ± 26 000 ha were utilised, constituting 23% of Bophuthatswana's maize needs. Farmers were satisfied with the project. Perceived advantages included the availability of mechanisation, credit and management 'doing everything'. Holdings size, yields and profits increased significantly, resulting in a higher quality of life.

The capital-intensive project was a short-term activity in order to facilitate food self-sufficiency to be subsequently complemented by longer-term capacity building, but this did not materialise. Although participation and HCD were striven for in theory, this did not feature in practice. Diversity in the community, sustainability and social realities were also not recognised at the time. Insufficient linkage and communication between stakeholders was evident. When the desired results were not achieved, pressure increased, as illustrated by an Agricor proposal for estate type farming. Implementation effectiveness was determined through a logical framework analysis and concluded that although production had definitely improved under project management, very little empowerment of farmers was actively attempted. While top farmers did well and non-participants were positively influenced through spin-offs, the majority lagged behind due to a lack of commitment and training.

In financial and economic terms, the first five years of the project were successful as illustrated by benefit cost ratios of roughly 1.35. Average profits were impressive. However, large variation in yield and profit occurred. Subsequent analysis established that profit margins for the project as a whole decreased, while the differences between farmers remained pronounced. The major objective: to develop arable potential and increase self-sufficiency was achieved temporarily, for a selection of participants and at extensive public cost. Pareto optimality was not achieved.

Despite valid criticism the project had significant positive spillover and linkage effects. More activity in supplier and processor sectors resulted while profits generated had effects both within and outside the direct project area. A significant number of employment opportunities were created. Procedures and

technologies used also had wider applicability and induced changes in the organisational and management systems in the agricultural support services. Other intangible benefits included an improved quality of life and improved confidence.

The project was unable to establish a range of farmers, and instead, left many in debt and enhanced class differences: farmers are today in a similar situation as before the project, after 18 years of project support and eight years as independent farmers. Sharecropping still is the major form of agriculture, but a significant drop in agricultural activity is evident since the early 1990s. Average yields decreased from over 2tons/hectare during the project to 1.7ton/ha. This study has, as have previous evaluations, found large variation in yields and profits. The probable reason was managerial input and aptitude that differed, highlighting economic diversity in the community. Existing diversity was quantified in a typology with four farmer types, facilitating the identification of constraints within homogeneous groups and therefore focused support. Serving farmers according to type will enhance clarity of client profile; facilitate appropriate strategy per type and eventually enhance development.

The DRSA framework captures the essence of the impact: objectives of participating farmers were not always properly addressed, impacting negatively on the sustainability of the project. Given the policies of the time, there was a policy fit, although no empowerment policy existed in the previous dispensation. The project did fit the programmes of the time. Although no IRD programme was officially established, infrastructural adaptation complemented the project. Market and government failure was evident and the project was warranted as an attempt to rectify this. The level of debt write-off as well as financing through NWC (as input provider) was inappropriate and contributed to a situation where most farmers with farming skills are today suffering with debt. The largest failure of the project was that farmers never accepted ownership or responsibility. No pareto optimality was achieved as the cooperative benefited more than the farmers, while benefits received by farmers also varied extensively. Although both financial and economic performance was initially positive, high levels of variation between farmers were always a concern. Given the current situation where farmers are in general ill equipped to farm, the project was obviously not sustainable. Equity considerations were not met and sustained through participation. Although it is difficult to evaluate after 26 years, the initial project proposal, which dealt with empowerment and participation, cannot be faulted. The project was potentially the optimal solution to the identified set of problems and objectives.

# CHAPTER SEVEN: DESIGNING A NEW PROJECT AT SHEILA

## 7.1 Introduction

This study aims to prove that a support strategy based on a redesigned project planning, implementation and evaluation approach is an intervention facilitating access to services and resources for differentiated farmer groups. The design described in this chapter is therefore based on the study's hypotheses that a project approach that accounts for economic diversity in an agricultural community is required to facilitate access through integration of role-players.

In previous chapters it has been established that extensive diversity exists at Sheila, despite the fact that this community resides in a fairly homogeneous land type and perceive themselves as farmers. It was further established that the previous project had benefits, but failed to sustain widespread empowerment, particularly due to a lack of focus on human capacity development and participation.

Given current constraints in terms of land access, credit availability, the state of mechanisation and farming skills, the project approach (again) represents a potential intervention to foster development. Redesigning of the approach entails that the project planning, implementation and management cycle is extended to include the project design criteria derived at through this study. This is elaborated upon in the strategies discussed, as part of an *ex ante* analysis to estimate the impact of these strategies on each of the groups defined in the previous chapter. The rationale is to enhance resource allocation efficiency and facilitate appropriate support strategies for the specific farmer types.

As a result of variation found in farmer potential and requirements, a differentiated approach to agricultural development at Sheila was first proposed by Bembridge *et. al.* (1982). According to this analysis only 10% of the Sheila farmers were potentially independent farmers. It was further argued that roughly 40% would not be susceptible to development programmes, due to socio-economic constraints, while the remaining 50% could, with guidance, improve their livelihood. These findings are largely supported by this study's results. Moreover, these conclusions support the project approach, based on a typology. The four farmer types identified could not be forced into one Taylorist model of support. It is conceivable that although one overall project could be used, differences in regulatory and support services should be established. The farmer-types described will consequently be subjected to logical framework analysis, describing strategies suitable for each type, based on a project approach. These strategies will be evaluated as basis for support recommendations.

The first step in this procedure was to consult again with a selection of the participants dealt with in the previous chapter, with regard to constraints and possible solutions. The methodology used was the Logical Framework Analysis (LFA) described in chapter three. After the LFA the intermediate impact (institutional change) is dealt with, as this links closely to the results from the LFA. The stakeholder level impacts, indirect impacts and concluding systemic impact framework follow. This order differs somewhat from that used in the *ex post* analysis, but is more logical for an *ex ante* analysis.

## 7.2 Defining issues and impacts

### 7.2.1 Logical Framework Analysis: The participative group process

As part of the *ex ante* impact analysis, a participative group process was organised with representatives of the four types of farmers, as determined with the quantitative survey reported on in the previous chapter. This entailed separate meetings with the representative groups. The names of the participants are attached as Annexure 4. The selection process was that all those interviewed and forming part of a particular group, were invited, and a representative sample of each group did take part in the subsequent meetings. Participative discussions led to the identification of the main perceived constraints. During this process a problem tree analysis was completed through contributions from the farmers. Although the problems described by the different farmers' types are linked to one another and to the main issue of cultivation, it is meaningful and illustrative to construct four problem trees. Logical linkages between these aspects are highlighted and solutions that impact on all groups facilitated in the process.

#### 7.2.1.1 Dynamics of sharecropping at Sheila

Given the land tenure system in the Sheila area, sharecropping plays a central role in all crop farming. This phenomenon also featured in the reasoning of all four groups when constraints were discussed. Sharecropping is therefore described in some detail, to enlighten the subsequent discussion of constraints. Sharecropping arrangements for access to land do impact, although in different ways, on all farmer types. As described previously, agricultural land in the area is state-owned and was allocated in 15 ha units to residents at the time of project development. Given the tenure system limitations, access to land for new entrants and farmers wanting to cultivate more than 15 ha often is problematic. The only way in which innovative farmers could access more cropland is through sharecropping the land of inactive farmers. Sharecropping entails forms of land hiring. As described previously, this was first documented in the RSA during the previous century as the manner in which black farmers' utilised white owned land (Van Onselen, 1996). Sharecropping takes place between consenting parties. Particular arrangements vary extensively, depending on the demand for land and the economic position of the landowner. The types of sharecropping common at Sheila can be described in the manner in which individuals fit the typology and the extent of landowner participation:

1 Pure hiring of the land – the landowner is paid an agreed upon fee for use of his land and has no further active interest in the enterprise. These arrangements are not common, but represent sharecropping between commercially orientated farmers and inactive landowners.

2 Pure sharecropping –the land lessee hires the land of the landowner for a part of the harvest – usually a tenth, paid in bags of grain. The landowner again takes little active interest. This is popular amongst progressive entrepreneurs or commercialising farmers in dealing with inactive landowners.

3 A shared contract – both the land owner and the land lessee provide part of the capital – often both spent capital, i.e. the owner pays for seed, fertiliser and labour while the lessee provides mechanisation and fuel. Variations on this theme occur. The landowner is active in the whole process. This is common where landowners have resources available and the cropper requires support in financing the enterprise.

4 The landowner is hiring the services of a farmer (contractor). He buys his own inputs and pays for all activities i.e. cultivation, weed control and harvesting. The landowner is the active farmer, more involved than the contractor. Here landowners are relatively well of and influences the contract significantly. This form is also popular with active farmers, as their risk decreases when landowners take responsibility.

Although sharecropping is the manner in which cultivation takes place, there are obvious differences in which the different types of farmers deal with circumventing the constraints inherent in the land tenure system. There are positive aspects to these sharecropping arrangements, as they do spread risk and represent a relatively low cost approach to land hiring. For example, obtaining land for ten percent of the eventual harvest can be viewed as cheap. Informal rental arrangements on communal land suggest that provision of credit to access land could greatly increase *de facto* access to production rights for enterprising farmers (Van Rooyen, 1993). How these arrangements fit the profile of the farmer types and can be made more efficient, given the specific constraints, is dealt with next.

#### 7.2.1.2 Describing constraints - Logical framework analysis:

From the following section it will be clear that there is overlap between the constraints of the different types of farmers in the typology. Some of the problems are however unique to specific types of farmers. The following descriptions of the specific constraints in crop farming for each farmer type were identified during both the qualitative and quantitative surveys and were comprehensively described during the participative LFA process.

##### 7.2.1.2.1 Inactive landowners

This group of respondents represented land right holders who during the evaluation were inactive and were not planting the 15 ha allocated to them. During the participative process it was ascertained that no respondent in this group had their land planted during the previous season. It was also perceived unlikely that this would change in the following season. This farmer type, called 'inactive landowners', became progressively less active since the termination of the project during 1994. For the past few seasons this most vulnerable group has not gained any benefit from their allotted cropland. During the evaluation a year earlier, less than half of this group planted, and then only small areas, on average 1ha in size. Mechanisation services are usually hired. This group has limited access to capital, as signified by an average monthly spending of R760 on essentials. The group represents 19% of the total population. These farmers do not qualify for credit, as they are considered too risky to finance.

Given the lack of secure tenure, no security is available for lender institutions to recognise. The mean household also owns significantly less stock than the average for the study area, further illustrating this types' lack of assets. The critical issue is that these farmers' lands are not utilised, providing neither income nor food. They are highly vulnerable, as illustrated by fewer income sources, less access to resources, and less food than other farmer types. The indirect lack of access to land contributes to poverty and hunger. The most obvious solution, expressed by this group, would be to hire out their land for sharecropping.

However, various factors contributed to a lack of sharecropping in recent years. One reason is that no relationship of trust exists between landowners and sharecroppers. Inactive landowners perceive that they have often been exploited in the past, not receiving their fair share of the output of their land. For most members of this group, sharecropping would entail a simple provision of land for a sum of money or more often a part (usually a tenth) of the harvest. They often perceive the share they receive as inadequate. Another perception amongst inactive landowners is that most sharecroppers cannot cultivate 'their land' properly due to failing mechanisation, causing low yields. This also limits sharecropping contracts. This group is significantly poorer than any other group and limited resources are geared towards survival, further limiting their influence in negotiations for sharecropping.

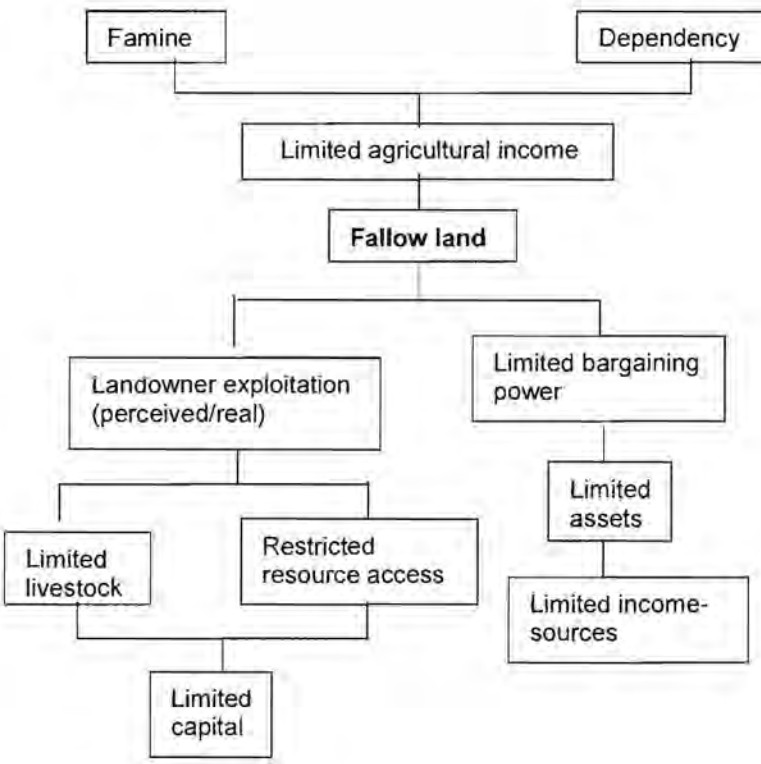



Figure 7.1: Problem tree for 'inactive-landowners'

#### 7.2.1.2.2 Opportunists

Another participatory process was initiated with a representative group of those land right holders that do occasionally utilise the land they have rights to, through contracting the services of sharecroppers. This group differs from the totally inactive landowners in that they do have access to some resources. Although they in general also have access to only 15 hectares, the nature of their sharecropping contracts usually differs somewhat from those that inactive landowners use in that they have more bargaining power. During certain years when money becomes available, they would enter into variations of sharecropping with active farmers. This entails that opportunists provide some of the inputs and/or labour. This slightly more influential group therefore could bargain for a more favourable contract, i.e., leading to a larger share of the harvest.

These respondents also suffer some of the same constraints that the previous group experience: They occasionally also feel exploited, although they have more influence during negotiations, given their relatively higher financial status. However, where these farmers can at least during some seasons afford to hire the services of a sharecropper, these services are not always available. Mechanisation services are becoming extremely scarce due to the poor state of mechanisation in the area generally and the lack of sharecropper resources. Another constraint is that many in this group have built up considerable debt, first with Agribank and recently with the Landbank. Therefore, this group effectively also has limited access to credit.

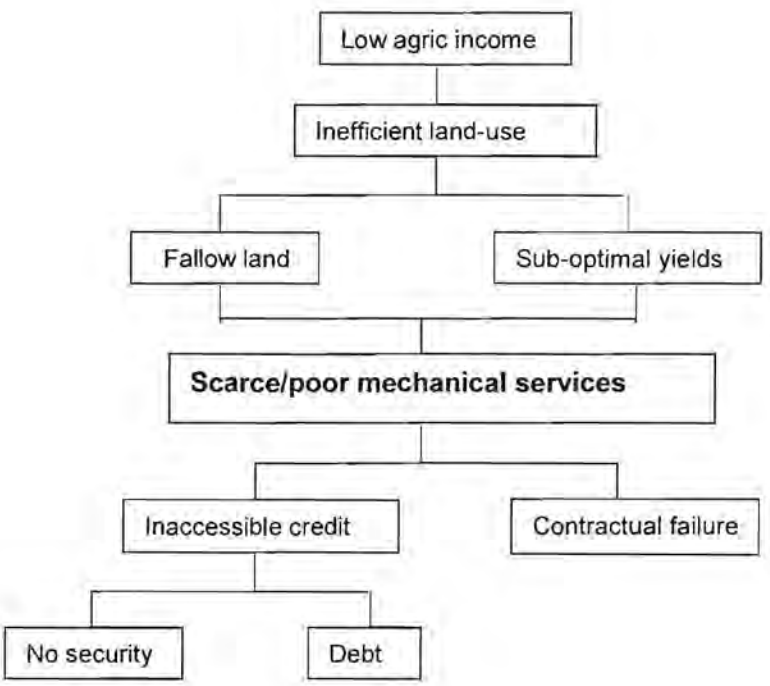



Figure 7.2: Problem tree for 'opportunists'

7.2.1.2.3 Entrepreneurs

This group shares certain constraints with other groups i.e. the communication breakdown with landowners, failing mechanisation and most importantly; access to credit. The general lack of access to capital does hamper any effort to improve mechanisation capacity. This type of farmer can also not offer land as security to the bank and had often run into debt in the past. However, this group does in general cultivate their 15ha as well as additional land.

Entrepreneurs complain that their contracts with different landowners are often misinterpreted: Where two landowners with contracts with the same cropper receive different shares, the cropper is often accused of wrongdoing, whilst the cropper would claim that these lands provided different yields, given an inherent variation in potential. Another significant concern is that their mechanisation is failing and funds for improving the situation are not available. This impacts on the potential yield, given that cultivation is most often sub-optimal.

Not only is access to credit a problem, but once loans are granted, the administrative process is often slow, impacting negatively on eventual profit. Many from this group obtain loans from the Landbank that are subject to the handing in of invoices to the co-operative. Orders have to be placed at the co-operative for inputs; invoices must then be obtained and subsequently provided to Landbank. The bank finally has to issue cheques to the co-operative. This process can take up to two weeks and longer, often leading to untimely cultivation practices. A related concern is that credit is often granted at a late stage in the season, when the optimal planting time has past. In many cases the 'window of planting opportunity' has closed by the time loans are available. Some farmers that obtained late credit persist to plant, even though the ultimate yield is affected negatively.

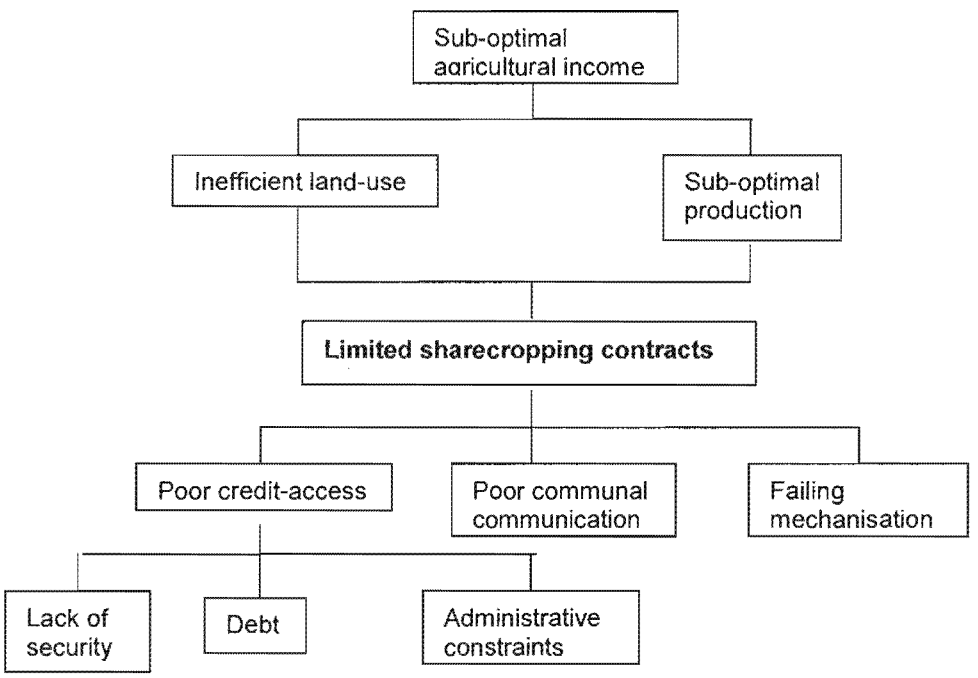



Figure 7.3: Problem tree for 'entrepreneurs'

#### 7.2.1.2.4 Commercialising farmers

All active farmers (entrepreneurs and commercialising farmers) perceive relationships between themselves and landowners as damaged. However, this is more intense for commercialising farmers, as they are viewed with particular envy because of their higher financial status. That some landowners use contractors from outside the ward (including neighbouring white farmers) is especially painful to commercialising farmers: they are most anxious to increase their cultivated area, as they best understand the principles of economic efficiency and economies of scale.

These farmers with capacity to plough more land find that many landowners are avoiding sharecropping arrangements with them, because they fear being exploited. Many landowners would rather leave their land fallow than to 'enrich' a perceived exploitative farmer. Another constraint is that when sharecropping is agreed to, contracts are most often for the duration of a season only, making it difficult for farmers to invest in inputs for sustainable utilisation i.e. liming for a more favourable ph, creating a more optimal environment for production.

Also problematic is where a contract is agreed upon, but not honoured by the landowner. A farmer would for instance prepare an area to find that the owner cannot provide the inputs agreed upon. Irrespective of the farmers' ability to obtain finances and negotiate another agreement, the farmer is not compensated for his initial investment.

Sharecropping lands at a distant village (as does occur) also has economic implications in terms of transport costs and security. With fences being in a poor state, the subsequent lack of security enhances theft and the destruction of crops by stray animals. Inactive land right holders are not interested in the upkeep of infrastructure.

This most progressive group of farmers also suffers from the effects of failing mechanisation and many of them need to replace at least part of their mechanisation. Farmers also complain that their relationship with the co-operative is a concern. They feel that they are not always getting a fair price, due to poor grading of their yield. The relationship with the co-operative as an important partner in input and output marketing is most often not perceived as conducive to production.

A constraint that is of particular concern to this group is the impact of theft. Maize is often stolen as green maize and even as grain. This even takes place in a form of organised crime where large gangs hire transport from an unconcerned farmer, 'harvest' a targeted land during the night, thrash the maize cobs at an isolated place and sell the grain to the co-operative.

The ultimate result is that many farmers with more than one tractor plough less than 150 ha, rendering the enterprise's economics questionable.

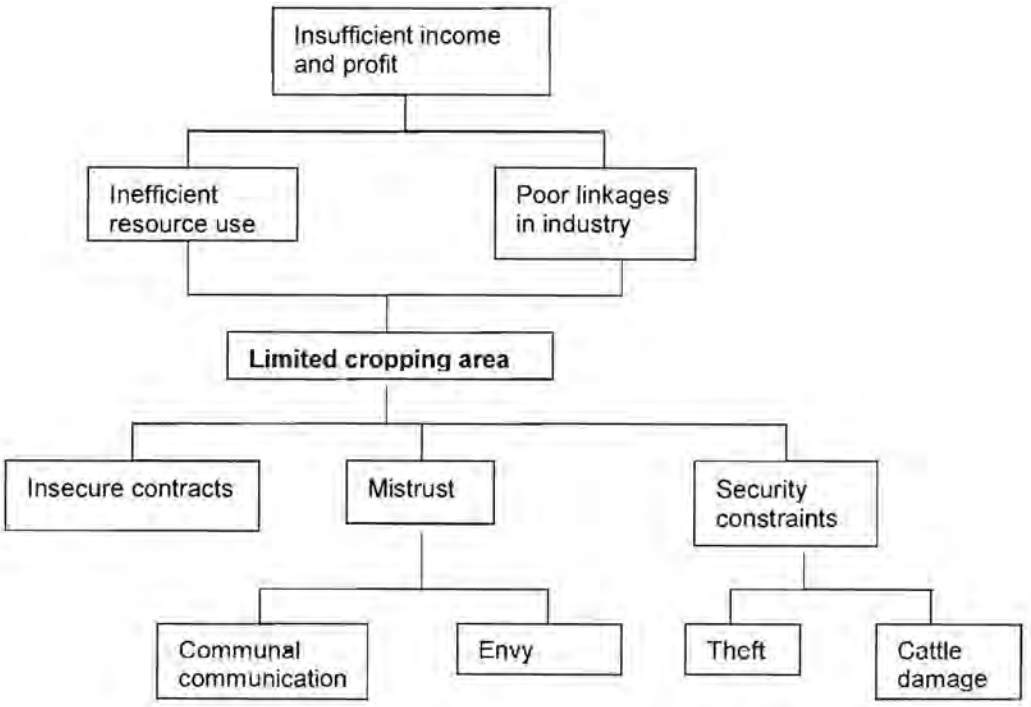



Figure 7.4: Problem tree for 'commercialising farmers'

The main constraint, 'cause' or root problems for the four farmer types entail fallow land; scarce mechanisation services; a lack of sharecropping contracts; and limited cropping areas respectively. These root problems are clearly related and deal to a significant extent with limited access to capital and with limited co-operation within the community. The ultimate result for the total community is large areas lying fallow and limited agricultural activity. This causes serious problems in terms of lack of income and in the case of poor landowners, leads to increasing poverty and even hunger. For more affluent farmers the obvious impacts are less income and less efficient mechanisation use. Economies of scale become important. The common denominator is ineffective and inefficient land utilisation.

In the following figures the problem trees are transformed into objective trees. This is a methodological step that enables the description of the envisaged future situation, which should be achieved through a strategy in which the problems are solved. This step enables the identification of the objectives and their position in the hierarchy; to show the activity-ends linkages in the diagram or 'objective tree'. This is a required step and guides the logframe matrix, which is to follow.

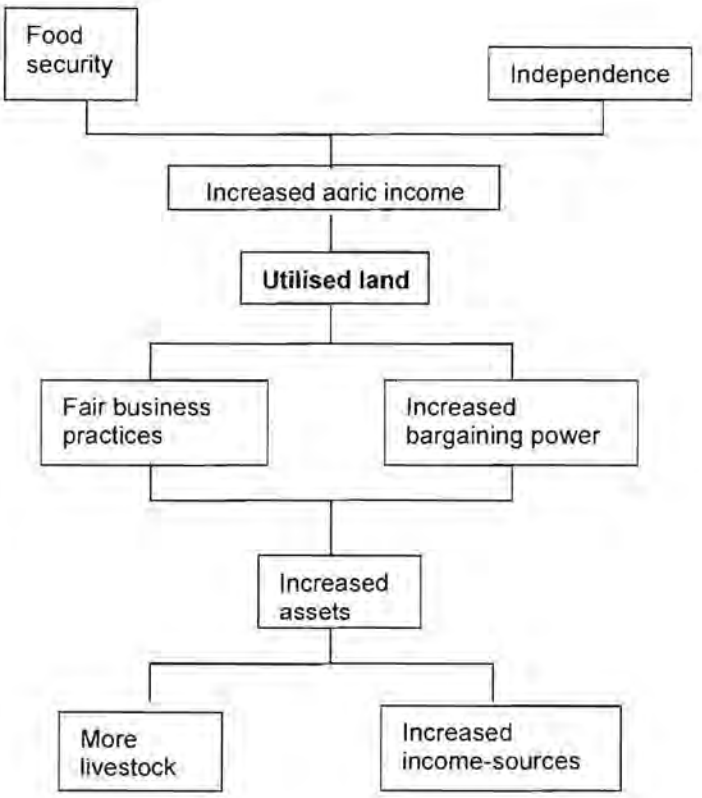



Figure 7.5: Objective tree for 'inactive-landowners'

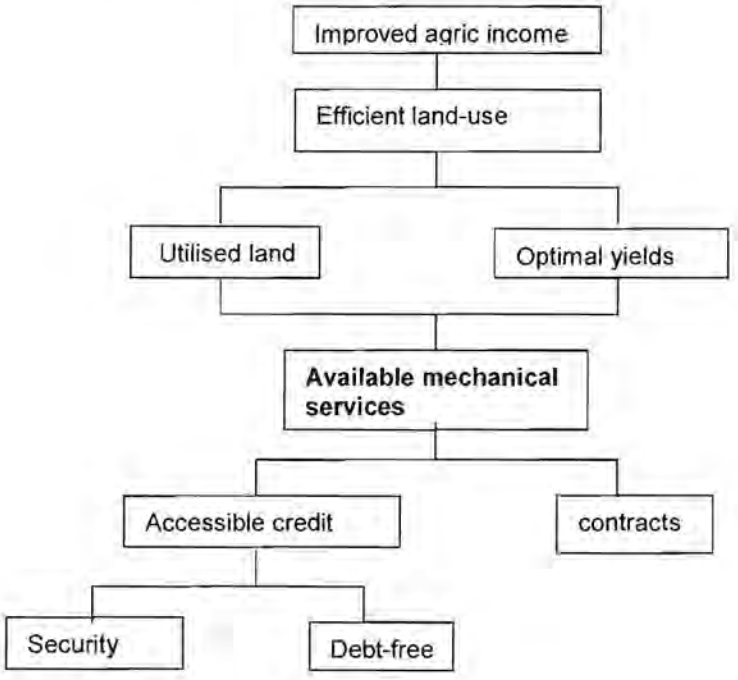



Figure 7.6: Objective tree for 'opportunists'

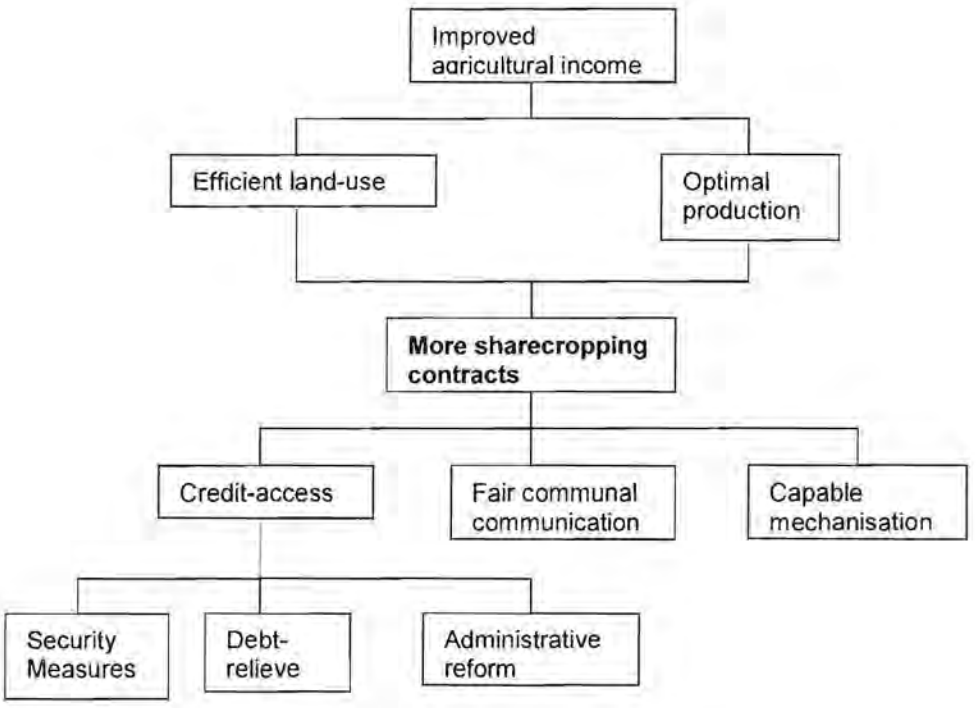



Figure 7.7: Objective tree for 'entrepreneurs'

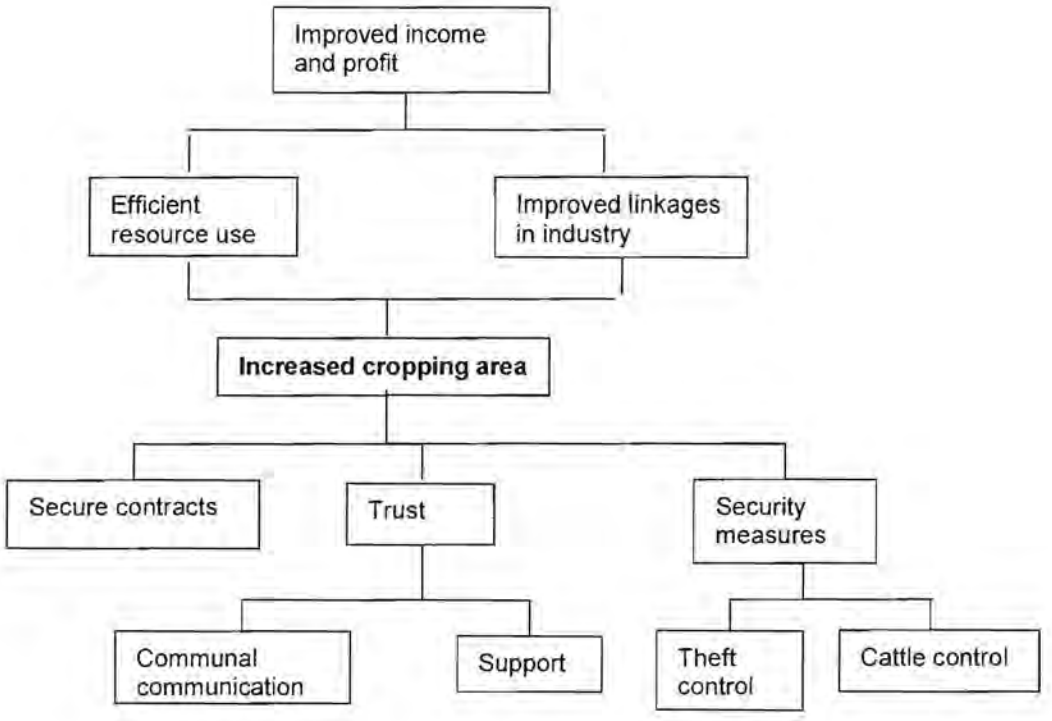



Figure 7.8: Objective tree for 'tree for 'commercialising farmers'

### 7.2.1.3 Project design - Logframes for farmer-types

This analysis deals with the four types in the Sheila typology. However, the main goal of all four groups could be described as obtaining improved livelihoods (for the two poorest types especially) and higher profit margins (for the two more affluent types). This is achievable through increasing sharecropping contracts and thus the area utilised. This is illustrated graphically in figures 7.5 – 7.8, where similarities are found, but unique features for development are isolated. The particular objectives and activities identified as required for each group are described through the LFA process and concluded with the logframes designed for each farmer type.

#### 7.2.1.3.1 Project design for 'inactive landowners'

The goal of an intervention for the inactive landowners would entail income from their 15ha plots, leading to food security and self-sufficiency as opposed to dependence on the state. The purpose as described in the logframe would therefore be to increase the area at Sheila being utilised, specifically the land these inactive landowners have access too. In this manner an asset currently idle, could be made profitable, through income obtained from the land as a result of a cropping enterprise.

The main intervention strategy for this group would consequently be to improve relationships within the community (specifically between themselves and the croppers), to facilitate more and improved sharecropping contracts. For this to occur, other required interventions will include improving the organisation and capacity within the community to facilitate representation of all groups, capacity building and security. This process is described in the logframe in Table 7.1.

Table 7.1: Project design through a logframe for 'inactive landowners':

| | **Intervention Logic** | **Objectively verifiable Indicators** | **Sources of Verification** | **Assumptions** |
|---|---|---|---|---|
| **Goal** | Food secure, self-sufficient households | Nutrition/health & employment data, Hh income | Publications, reports, CSS statistics | |
| **Purpose** | Land utilised for agric income | Contract #, area planted, yield data | Contract documents, reports, records | Community & role-players committed |
| **Intermediate results** | Rectify communal relationships<br>Facilitate participative contract development | Regular group-interaction, study group activities, contract #'s, utilised area | Input & yield data, contracts, reports, study group minutes | Goodwill and trust can be developed<br>Support & skills available |
| **Activities** | Organise & empower viable study-groups.<br>Organise communal security system<br>Establish alternative income-generating projects | Group formation process, constitution & goals, HCD schedule, planning process, resulting proposals & implementation | Minutes, programmes & schedules, project reports, proposals | Participant commitment to co-operation and project revival.<br>Means & leadership available in community |

#### 7.2.1.3.2 Project design for 'opportunists'

The goal of an intervention for opportunists would, as for the inactive landowners, entail income from their 15ha plots, leading to agricultural income and improved livelihoods. The purpose as described in the logframe would be to increase the area of opportunists at Sheila being cultivated, to utilise the land asset currently providing no income.

The main intervention strategy for this group would consequently be to facilitate access to capital or credit, which would facilitate access to mechanical services. Other required interventions will include improving the relationships and organisation of the community to facilitate capacity building, security and increased profit. This process is described in the logframe in Table 7.2.

Table 7.2: Project design through a logframe for 'opportunists':

| | **Intervention Logic** | **Objectively verifiable indicators** | **Sources of verification** | **Assumptions** |
|---|---|---|---|---|
| **Goal** | Improved livelihoods/profit | Nutrition/health data, jobs, Hh income, profit | Publications, reports, CSS statistics | |
| **Purpose** | Increased contracts: i.e. production | Contract #, area planted | Contract documents, reports, records | All stakeholders committed & involved |
| **Intermediate results** | Access to capital (credit) & mechanisation | Loans granted, inputs bought, # of working tractors, area ploughed | L/bank reports, Coop records, ward records, reports, yield data | Debt, security issues dealt with, viable links forged |
| **Activities** | Study group development & HCD<br>Participative contract development | Programmes, training schedule, results, records | Programme and project reports, publications, constitution | Participant commitment to process & communal action. Leadership, support & skill available |

#### 7.2.1.3.3 Project design for 'entrepreneurs'

The goal for this group would entail improvement in agricultural income, through the grain-enterprise. The purpose for entrepreneurs is therefore to revive sharecropping contracts with inactive landowners. Key strategic interventions in this regard would include facilitation of access to capital and the closely linked improvement of mechanisation equipment. Other interventions this group requires are agreements with service providers, through improved linkages, as facilitated by a project approach.

An intervention actually applicable to all farmer types would be the restoration of landowner-cropper relationships within the community. Particular actions to be taken to achieve the goal and purpose of entrepreneurs would include a participative group process to explain the potential and particulars of sharecropping. This should be facilitated through the formation and empowerment of study groups for each group, each with its particular focus. The logframe for this group is provided in table 7.3

Table 7.3: Project design through a logframe for 'entrepreneurs':

| | Intervention Logic | Objectively verifiable indicators | Sources of Verification | Assumptions |
|---|---|---|---|---|
| **Goal** | Improved agricultural income/profit | Yield data, Net farm profit, Hh income | Publications, reports, CSS statistics | HCD implemented & management sound |
| **Purpose** | Increased contracts: i.e. production | Contract #, hectares planted, active farmers | Contract documents, reports, records | Communal commitment, acceptable agreements |
| **Intermediate results** | Access to capital (credit) & functioning mechanisation | Loans granted, inputs bought, # of working tractors, area ploughed | L/bank reports, Coop records, Dept. records, reports | Debt, security issues dealt with & link established |
| **Activities** | Develop linkage with Coop, L/bank etc., organise participative contract development. | Agreements, proposals, Resources: loans, mech., contracts, groups | Written agreements, contracts, NWC, L/bank records | Commitment to cooperate; links viable, facilitation effective |

7.2.1.3.4 Project design for 'commercialising farmers'

The goal for this group would be improvement in production efficiency; addressing the constraint of economies of scale. An increase in the area cultivated, towards a more economic optimum, would therefore be the purpose of this group in an intervention or project. Key strategic interventions in this regard would include improving the efficiency of resource use and the facilitation of effective linkages with other stakeholders in the agricultural industry. The aim of these interventions would be to facilitate cost-effective access to capital, services and resources, as facilitated by a project approach. An intervention also applicable to this farmer type would be the restoration of relationships within the community, particularly with landowners. A participative group process to discuss the sharecropping process should lead to improved understanding. Landowners would appreciate the constraints of the enterprise and could be informed to question results from a position of knowledge. Communal agreement on a project, with scope and sub-projects for the four types in the Sheila typology, facilitating access to resources and services could be achieved. This should be facilitated through the formation and empowerment of study groups for each group, each with its particular focus. The logframe for the commercialising groups is provided in table 7.4

Table 7.4: Project design through a logframe for 'commercialising farmers':

| | Intervention Logic | Objectively verifiable indicators | Sources of verification | Assumptions |
|---|---|---|---|---|
| **Goal** | Improved agricultural income and profit | Input & output data, net farm profit, agric income | Publications, reports, CSS statistics | Sound communication, security & management |
| **Purpose** | Increased cropping area: i.e. efficiency | Contract #, area planted, active farmer # | Contract documents, reports, records | All committed to process & HCD |
| **Intermediate results** | Develop linkages with key-stakeholders to facilitate access to resources & services & rectify relationships | Loans granted, inputs bought, agreement-contracts | L/bank, Coop & other reports, Dept. reports, transaction records | Relationship established between role-players through organised communication & credit arrangements |
| **Activities** | Study groups formed, HCD instituted, contracts developed, linkage agreements established | Programmes & minutes, input-output contracts, sharecropping contracts Resources: loans, mech., contracts, groups | Stakeholder reports, contract records | Acceptable & skilled leadership & facilitation |

7.2.1.3.5 Concluding remarks

Much of the land previously cultivated at Sheila is currently lying fallow, generating no income. The results are low income and profit in the best cases and no income, poverty and hunger in the worst. Given the limiting tenure system, a viable manner in which to generate profit from this land is through sharecropping, facilitated through acceptable contracts between landowners and croppers. While each type in the Sheila typology should have a distinctive support-focus, the common goal is to increase the productive area and to obtain and enhance agricultural income through grain production.

The LFA results clearly indicate potential for reviving the project. However, specific actions must be initiated for the results, purpose and goal of the project to be realistically expected. This must include a participative planning process, with a focus on empowerment. The four types scientifically defined should form some form of study groups, each with its particular focus in the overall project, as a critical phase of institutionalising the project planning and implementation cycle. In these forums issues regarding contracts, responsibilities and rewards can be resolved, contracts can be initiated, and people can participate fully in the process of capacity building. This issue is crucial if a sustainable project is to be implemented.

A condition for effective implementation of the project must entail the crucial intervention of dealing with restoration of landowner-cropper relationships in the community. Without a relationship of trust, addressing contractual failures, general land access in the area is not possible. A linked strategic intervention is to empower and capacitate all four types in the Sheila typology. During this human capacity development process the complex crop enterprise can be made clear to those not directly involved, to create understanding. Crucially, community responsibility for security can also be developed. All groups must become part of the project revival process. This process should besides the obvious element of empowerment, facilitate transparency, to improve relationships. The resultant improved trust, capacity and organisation within the community should create a strong bargaining forum.

The approach for each farmer type should differ, through strategic interventions that complement each other and the overall goal of increased productive land through more, improved contracts. Key is improved access to capital, particularly for active farmers. This, as well as the closely linked improved mechanisation services can be facilitated through agreements with service providers, i.e. effective linkages. These should include local service providers and marketing agencies. Particularly the NWC and Landbank should be approached. Committees representing farmers and service providers should be institutionalised to develop feasible and mutually acceptable proposals that facilitates farmer access to capital, input and output markets. Such institutional agreements should be financially rewarding for all stakeholders. Given the potential of the area in terms of human and physical resources, this is certainly possible. Mutually acceptable sharecropping contracts between land right holders and croppers will also require written agreements or contracts. Developing binding documents demands a preceding capacity building process. As previous sharecropping agreements resulted in many misunderstandings, it is necessary to give ample attention to this manner. Active farmers during

consultation proposed the use of a third trusted party as an arbiter to explain the difficulties of the cropping enterprise to landowners. This could be investigated.

Another related and very important participative activity would be to deal with security. Theft is one of the main constraints identified and security must become a community priority. A type of awareness campaign in the area should therefore take place, culminating in all types taking responsibility for the security of the enterprise. Selected members of the community should be capacitated to form a security team, responsible for patrolling the cropping area.

The final action would be to develop a comprehensive agreement with all relevant stakeholders regarding provision of all services and resources. This must clearly spell out the responsibilities of all stakeholders, including the various farmer types. It should also describe institutional arrangements. All preceding actions must be dealt with, including group formation and a capacity development program. This procedure clearly entails a comprehensive project proposal that can be evaluated in terms of potential impact.

The engagement with the Sheila community dealt primarily with redesigning the project, to ensure survival and engagement of those inactive and to enhance the production of the active groups. However, once this process is successfully implemented, the inactive groups in particular, should be engaged in a process to investigate further opportunities generated through the revival of the project. Once the benefits of increased production, yields and income are realised, inactive landowners could for instance develop a subsequent proposal for an alternative project. This group, as well as the opportunists should utilise the benefits obtained from their improved financial position, in appropriate ventures, fitting their resources. Empowering these homogeneous groups must initially entail the development of organisations with bargaining power, crucial for continued participation and a sense of purpose. This would create an sound environment for interactive training, organisation and co-operation.

The success of the project intervention is dependent on certain conditions. The broader community must accept the project particulars as developed by the various groups, resulting in a limited number of farmers cultivating on behalf of many landowners. All parties must be committed to the process as well as the study group formation, capacity development process and security measures. Volunteers must be forthcoming to fulfil various functions. A certain amount of goodwill must exist in the community while the agreements reached between stakeholders will also demand a high level of acceptability within the area. All this depends to a large extent on the successful institutionalisation of the project cycle within the community, to ensure the sustainability of the project. It is at this point that many initiatives fail; as the theoretical strategy is not implemented vigorously in practise.

In summation, this logical framework analysis described a set of activities to deal with the constraints and opportunities in crop farming in the Sheila area. This effectiveness analysis describes the goals, purposes and envisaged activities for each farmer type, guiding the development of a comprehensive project proposal. This proposal effectively entails a revived project approach, dealing with the two

hypotheses of the study: diversity is dealt with and integration through a project approach is addressed to facilitate cost reduction.

Particulars of how these activities should be handled and will impact on institutions, the enabling environment, the stakeholders (in terms of financial, economic and social impacts) as well as the indirect impacts of this proposed project, are described in the following sections of this chapter.

### 7.2.2 Institutional impact

#### 7.2.2.1 Strategy:

The proposed intervention or project is to an extent similar to the capital-intensive projects used previously, with the aim to facilitate food self-sufficiency. However, while the aim should still be increased production, the focus should shift somewhat from capital-intensive methods and technology towards participation and HCD. Although the use of capital and a relatively intensive production system is still foreseen, the main focus would be to empower selected participants to act independently. Profit oriented agricultural production should certainly remain the goal – for all stakeholders involved. Initial support or even subsidisation of farmers might be warranted, but all stakeholders should ultimately be able to be profitably involved in the project. A main objective would therefore be to commit specific service providers to the project. While part of the initial focus will be on capacitating selected farmers to engage more land, a concurrent empowerment process of all four types, as organised in study groups will be dealt with. With regard to the design criteria established in chapter two, co-ordination, linkages, and through these; cost saving and value adding is to be addressed. Participation and HCD should be non-negotiable criteria for the project. With this strategy the criteria of dealing with diversity, sustainability and social realities are also recognised.

#### 7.2.2.2 Organisation:

Although central facilitation of services and inputs is again foreseen, this should not entail simple provision. More individual choice and action must be facilitated. A production co-operative, electing a management committee representing all farmer groups as well as service providers and other role-players must be institutionalised. This body with real responsibilities, facilitating production through sharecroppers (not contractors of the project), represents a viable organisational structure. The main difference with the previous project would be that the farmers themselves would take more responsibility. This approach of co-operative management and central services to individual holdings can still effectively combine state, private and co-operative capital in financing and management of a project and subsequently individual holdings. In terms of the developed design criteria, the criteria of optimal linkages are in this way addressed.

The organisation of the study groups for farmer types as well as the central project management committee is crucial to the success and particularly the sustainability of the project. It is only when the

commitment of a critical mass or number of participants is achieved and sustained that progress is inevitable. Of great importance is to allow for optimal individual farmer decision-making. In this mode, the farmer can choose the intensity and cost of production. He bargains with landowners for the area that he could cultivate and utilises inputs according to his yield targets, in correspondence with the capacity building process engaged in. It is therefore vital that study groups should focus on providing relevant information and skills training to capacitate farmers to make informed decisions.

#### 7.2.2.3 Support services:

Support services that are foreseen include infrastructure, technical, administrative and financial assistance. In exploratory discussions, the NWC has indicated that they would commit the services of a seconded manager to such a project, so facilitate efficient technical support (input facilitation, marketing services) and liaison. The existing infrastructure in terms of stores, an office, roads etc., can again be utilised and only minor repairs are required. The proximity of Sheila to Lichtenburg, where the main offices of NWC are situated, is beneficial.

The NWDACE could also provide key support personnel, especially in terms of extension and research. In this manner 'on farm' demonstrations and trials could be facilitated to guide farmers in decision-making. Technology transfer can also be facilitated. These personnel should also play a key role in facilitating the linkages between farmers, the state and private sector stakeholders. The Landbank as primary provider of credit has also expressed interest in the project and could possibly become an active stakeholder in terms of supporting project farmers.

#### 7.2.2.4 Extension, training and access to information:

The main role of the NWDACE would be to facilitate capacity development, in co-operation with other stakeholders. The NWC, Landbank and Grain SA have expressed interest in such a project and it is foreseen that these institutions could be helpful in exposing farmers to information, technology and provision of training. Research and demonstration activities should be priority. These actions should be facilitated through the management committee, study groups, mentor farmers and departmental personnel.

Previous evaluations (Bembridge, et. al., 1982) also argued for an on-farm research focus, particularly continued evaluation of the production process to identify possible improvements. These should concentrate on low cost technology and low external input requirements, given the availability of capital. Ways to minimise losses and the incorporation of multipurpose crops are priorities. Especially for the inactive landowners and opportunists, off farm activities could add value close to the production source and also create links with the broader economy. These activities could conceivably facilitate employment and serve as 'safety net'. Buffering through diversification can play an important role in creating self-sufficiency. Marketing possibilities also require attention, as they are driving forces for any commercial venture.

Managerial aptitude is the most important ingredient in farming efficiency (Bembridge *et. al.*, 1982; Stilwell, 1985). It is crucial that through a well-organised training programme, based on participatory determined priorities, farmers are empowered in sound decision-making. If the linkages between the various stakeholders are effective, farmers should have access to vital information in terms of input and output prices, practices, etc. This combined with a thorough empowerment programme (HCD) would eventually allow farmers to make informed decisions regarding their enterprise.

#### 7.2.2.5 Input supply and mechanisation services:

Given the interest and capacity of NWC, this organisation is ideally placed to efficiently facilitate input and output marketing services from its Lichtenburg headquarters. The existing infrastructure at the primary co-operative at Sheila could be upgraded and used as depot, while the silos in the area should also become available. Active farmers should obtain membership of the primary co-operative and of NWC, empowering them and facilitating access to all the services the co-operative has to offer.

Production inputs, tractors, parts etc., could be supplied through the NWC, and then channelled through the primary co-operative. However, it is crucial that these arrangements do not constitute handouts. Again, although assistance to reduce costs should be facilitated by such an integration process, through the project approach, financial and economic viability should not be endangered and all parties should be able to gain a profit.

Design criteria that need specific attention in this regard are proper co-ordination, effective linkages and real participation by the farmers involved. Again, farmers should be empowered to make their own decisions and no broad 'package' should be universally provided to all farmers. In this manner technological consideration will match the social realities of individual farmers, fulfilling an important project design criteria. It must be possible for an individual farmer to use a unique arrangement that fits his particular enterprise and status. If the foreseen linkages are managed properly so that they are effective and efficient, substantial cost saving could be achieved through this integration of stakeholders. In this way the project approach will be a viable model for farmer development.

#### 7.2.2.6 Procedure:

7.2.2.6.1 Participant selection:

It is crucial that farmer groups are classified and formed on farming ability, experience, performance and interest. This should be a participatory process in which the study groups play a key role. All landowners that have land being used in the project should become part of the process. The study groups should determine the active farmers, to be endorsed by the management committee. This procedure should be agreed upon before the project is initiated.

Ideally the study groups should identify those particular farmers that will be actively engaged in the cropping enterprise, on behalf of all landowners. While the selected farmers will be primarily beneficiaries of the project, the landowners will gain directly from the yield resulting from their land. As members of the study groups, some of those not actively farming would probably be part of the production process. While many would be able to sell their labour on the project, other could become employees i.e. tractor drivers or security officers. As described in the previous section, this process should improve the livelihoods of landowners, which should ultimately lead to the development of alternative projects, through the gains from the cropping enterprise.

7.2.2.6.2 Tenure and land allocation:

All members of the community with access to land feel extremely strong about their land rights. As described repeatedly, this land represents an important part of their livelihoods. The proposed strategy of using sharecropping contracts to facilitate progressive farmers' access to land currently seems to be the only viable option, even if the tenure system is adapted towards individual ownership. Farmers or croppers should through the study groups, bargain with individual landowners for the land they require to function optimally, given their particular resources. Scale is a key variable and economies of scale play an extensive role in the viability of the project. This issue can be guided by support services, but will have to be agreed upon by the individual farmers and landowners.

7.2.2.6.3 Project committee and study group responsibilities:

The management committee should be representative of the four types of farmers identified in the study. This will ensure transparency and commitment. Other stakeholders that must be represented are the NWDACE through its support personnel, the NWC and the Landbank. Other stakeholders that could probably be involved are Grain-SA, neighbouring mentor farmers and the agricultural unions NAFU and NWAU. This committee should be primarily responsible for liaison and decision-making. It should be elected annually although re-election should be possible. This committee must be voluntary and members should not be paid a salary. The committee should receive training regarding effective organisational functioning. It is vitally important that this committee gains the respect of the community and especially the study groups. Farmers should have an equal vote in influencing priorities and other stakeholders should not misuse their position to dominate proceedings, as this will negatively impact on the sustainability of the project. Again the design criteria dealing with co-ordination, linkages and participation must be recognised.

**7.2.2.7 Enabling environment:**

This project is primarily about facilitation of integration of stakeholders to lower production costs. No major infrastructural adaptations are foreseen. Comprehensive infrastructure in terms of buildings is in place, but will require minor upgrading. The main complex at Sheila consists of various offices, a primary cooperative with a fuel depot, and various buildings for supplies. A training facility with living

quarters are in a poor condition and might be upgraded in future, although this is not an initial priority. No major new facilities need to be provided for project implementation. The layout of the lands as well as fencing of lands should be the responsibility of the farmers.

### 7.2.3 Farmer-level impact

This people-level impact includes all direct 'on the ground' impacts; i.e. project participants, non-participants, project agents and the community at large. In this evaluation, this impact will include a social, financial and economic impact determination of the role-players described.

#### 7.2.3.1 Social impact

A dryland-cropping project at Sheila, with the main focus on maize production as proposed in this chapter, should have major beneficial social impacts. These should be qualified in terms of resource and income distribution. As government support and facilitation will be required, responsiveness to national policy objectives is also a consideration. Key considerations for government would include employment opportunities, regional growth dimensions, equity dynamics, gender issues, impact on social organisations, change in tenure, division of labour as well as quality of life improvement (Van Rooyen, et. al., 2002).

In terms of national priorities, such a project would fit the Strategic Plan for South African Agriculture perfectly. Most importantly it facilitates access to resources and services for a significant group of farmers, through linkages with the private sector. It constitutes significant potential in terms of entrance into a competitive market. If the conditions specified are followed, this proposed project should be a sustainable intervention from an environmental, social and economic viewpoint.

As the project has as purpose to increase the area cultivated, the foreseen increases in production, food security and profit should impact on employment in the area. Increased economic activity as a result of more agricultural enterprise, would impact on labour requirements, trade in agricultural commodities as well as on other rural activity. This would impact on the labour market as labour plays a key role in agricultural production in the area.

While the initial benefits would be expected to occur in the Sheila area, the success of the project would probably cause an expansion of the project to other parts of the 70 000ha area in Ditsobotla that is suitable for crop production. In terms of the input and output markets required, the regional agricultural network can be expected to deal with significant increases in activity.

As the approach proposed makes provision for diversity, through the facilitation of empowerment of the four types of farmers in the Sheila typology, there is ample reason to believe that all those involved in agriculture in the area should benefit from the project. Increased economic activity should also have a positive influence on expenditure and trade in the area. Although the focus is on those with an interest in agriculture, the newly established municipal councillors as a form of local government, as

well as the traditional leadership are to be involved in the process. As the security of the crops is a major strategic objective of the proposal, the broader community should also be involved and will be made part of the project. A priority is organisational or institutional arrangements, with as a main objective, to facilitate improved relationships. As argued, no change in tenure arrangements, except for a more streamlined and formalised contractual sharecropping is proposed. In this socially responsible way, the emotional and cultural value of land is recognised.

Through the project, distributional effects will most definitely be addressed: more land will be cultivated through the increase in sharecropping. Access to services and inputs could be effectively facilitated and through the project procedures, management practices would improve and production should increase significantly. Once this has been achieved, it is perceived that increased profit will lead to more disposable income and improvement in the quality of life. This will result from increased services, more food, better transport etc., and indirectly through better nutrition, health, the ability to pay for education, etc. The increase in available funds will probably have a positive influence on education levels, as households would be able to afford to provide children with a better education. While most of the farmers in the area believe that the maximum maize yield possible is between two and three tons per hectare, 4.2t/ha has actually been determined as achievable. Only 12% of the respondents felt that 4 tons per hectare was possible. Given the enabling environment that the proposal embodies, the enterprise results might have a much-needed positive impact on the confidence levels in the agricultural community.

#### 7.2.3.2 Financial impact

As stated during the ex post analysis, financial analysis is focused on the business prospects of a project; dealing with profit being calculated at market prices to determine capacity for income at two levels; the farmer's and the agent (public and private sector) level. Prices used reflect the going price for inputs and outputs. The objective is to establish if direct costs (all associated production and capital costs) cover after tax income, creating an incentive to participate (Van Rooyen, 1986). In this analysis, basic enterprise input cost with corresponding yields, sales and household consumption figures were sourced at farmer level. Regarding financial analysis for the agents, cost estimates and the fiscal impact of the project must be determined. This included values of goods and services (investment and running cost) needed to initiate and maintain the project (Van Rooyen, 1986). These costs include those associated with infrastructure, financing, staff, training, marketing, storage, and the effect on the balance of payment. Output deals with estimated yields and sales.

##### 7.2.3.2.1 Without project

The without project scenario in the Sheila area today differs only somewhat from that before the initial project was started in 1976. Land holdings are now mostly 15ha, while farmers that are more successful sharecrop areas of 30, 45 and more hectares, with a few individuals even cultivating 200 hectares. While between 50 and 60 farmers were active during the late 1990s this number has

dropped sharply and during the 2000/2001 season only 15 farmers were active in the Sheila area. This is representative of the scenario during the late 1970s. More than half the lands are currently lying fallow, mostly due to a lack of sharecropping contracts. Sharecropping still is the major form of agriculture, and this is the key to a revival of the area. The limited and declining number of active farmers is due to failing mechanisation, debt and security constraints. Average production during the past few years has been relatively low at 1.7t/ha. However, some of the commercially inclined farmers with fair cultivation practices achieved considerably higher production figures. The few commercialising and entrepreneur type farmers that remain active commonly achieve yields in excess of 2.0 ton/hectare for maize. Given the typology data described, a 'without project' financial analysis for the crop enterprise is described in table 7.5.

Table 7.5: 'Without project' financial analysis for maize for a Sheila typology during 2000:

| Farmer type & number/type | Ha/ farmer | Input costs/ha* | Yield/ha (t/ha) | Total ton** | Price /ton | Income /ha | Profit/ha | Profit/loss /farmer |
|---|---|---|---|---|---|---|---|---|
| **Inactive landowners (23)** | 2 | 900.00 | 0.5 | 23 | 809.71 | 404.86 | -195.14 | -390.29 |
| **Opportunists (46)** | 10 | 650.00 | 1.0 | 460 | 809.71 | 809.71 | 159.71 | 1597.10 |
| **Entrepreneurs (43)** | 25 | 850.00 | 1.75 | 1881.3 | 809.71 | 1416.99 | 566.99 | 14174.75 |
| **Commercialising (11)** | 50 | 1000.00 | 2.0 | 1100 | 809.71 | 1619.42 | 619.42 | 30971.00 |

*Input costs determined with help from provincial agricultural economists
**hectares planted x yield/ha x # of farmer type

Animal numbers have dropped significantly during the project's lifetime and the contribution per hectare dropped lower during the past few years, due to further degradation as well as shrinking available grazing. Most farmers state that except for a few animals that are kept near the homestead, their cattle enterprises were largely terminated or moved elsewhere, mainly due to security problems and declining communal land size. In the survey only 17% reported some income from livestock, but this was generally not significant, with high variation. Farmer's during recent discussions stated that the livestock enterprise at Sheila has decreased even further. The more affluent farmers have cattle at posts outside the ward.

Although livestock plays a part in many rural households, in most cases this does not constitute a production-oriented enterprise. The average cattle herd during the survey contained more than 40% male animals, highlighting the sub-optimal nature of the enterprise. This is aggravated by the lack of grazing land, especially in the light of recent extensive settlement of people. Indirectly resettlement also caused a reduction in stock numbers, as theft significantly increased during the past two years. A 'without project' financial analysis for the livestock enterprise is described in table 7.6.

Table 7.6: 'Without project' financial analysis for livestock for a Sheila typology, during 2000

| | Livestock numbers* | Livestock costs* | Livestock income (p.a.) | Livestock profit | Total livestock#* |
|---|---|---|---|---|---|
| **Inactive landowners** | 5 | 530.00 | 600 | 70.00 | 455 |
| **Opportunists** | 10 | 560.00 | 1300 | 740.00 | 250 |
| **Entrepreneurs** | 20 | 600.00 | 2000 | 1400.00 | 340 |
| **Commercialising** | 40 | 1800.00 | 6000 | 1200.00 | 340 |

Figure includes mostly cattle, but also some small stock, pigs and donkeys
*fodder, vaccination, dip, medicine, lick
#based on percentages of type in typology

7.2.3.2.2 Enterprise budget – farmer level analysis

For farmer level analysis, an enterprise budget was compiled. Average input cost (direct cost) data for the area, was obtained from the NWC, and combined into one figure. This figure does represent direct enterprise costs, i.e. fuel, labour, mechanisation, seed, etc. According to the typology established, the commercialising farmers comprise 11 and the entrepreneurs 35 % of the agricultural community at Sheila. This represents 54 individuals who according to the analysis could be effective farmers, if an environment conducive for production could be created. It is assumed that such an environment has been created and that this number of farmers, who could effectively farm, has been identified. Given the typology profile it is further assumed that entrepreneurs would achieve an average production of 2.5 ton/hectare and commercialising farmer 3 ton/hectare during the first season. Entrepreneurs have access to 100 ha each, while commercialising farmers have access to 200 ha each, for a total area of 6500 hectares. It is also assumed that satisfactory agreements with regard to sharecropping have been achieved with the inactive landowners and opportunists. According to NWC, a maize budget, aiming at a 3t/ha harvest would include the following costs:

Variable costs without top dressing (including seed, fertiliser, chemicals, insurance, fuel, etc.): 1078/ha
Variable costs with top dressing (including fertiliser, pesticide, herbicide, labour, etc.): R392/ha
Variable harvest costs (including fuel, repairs, labour, etc.): R134/ha
**Therefore total enterprise costs:** **R1604/ha**

This information is used in a basic financial analysis described in table 7.7.

Table 7.7: Financial analysis [in nominal values] of the different farmer types in the project.

| Without project | | With project | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Farmer type** | **Gross income** | **Farmers** | **Ha** | **Ave yield (t/ha)** | **Maize price/ton** | **Income/ha** | **Prod cost/ha** | **Profit/Loss/ha** | **Gross income** | **Net benefit** |
| Inactive landowners | -8977 | 23 | - | - | n/a | | | | 119 600 | 128 577 |
| Opportunists | 73 467 | 46 | - | - | n/a | | | | 278 300 | 204 833 |
| Entrepreneurs | 609 515 | 43 | 4300 | 2.5 | 809.71 | 2024.28 | 1350 | 674.28 | 2 899 404 | 2 289 889 |
| Commercialising | 340 681 | 11 | 2200 | 3.0 | 809.71 | 2429.13 | 1604 | 825.13 | 1 815 286 | 1 474 605 |

The 'without project' gross income used in table 7.7 was derived from table 7.5, by multiplying the profit per farmer with the number of farmers. For the sake of useful comparison, the maize price used for the 'without' and 'with' scenarios was the same. Whilst the production cost for commercialising farmers was based on the data provided by NWC, the production costs of entrepreneurs was assumed to be somewhat lower, as this was a typical trend found throughout this analysis. Obviously, the budget compiled for the inactive landowners and opportunists differs from that of the active farmer types. The project model proposed is based on the assumption that these farmers will provide their available land to the entrepreneurs and commercialising farmers. Their income will be derived from fees for providing their land (most probably a tenth share of the harvest) as well as from income from labour. Labour income would be derived from assistance with maintenance and harvesting, as well as

from services in terms of security, etc. Inactive landowners will arguable earn 10% of a 2.8t/ha yield for their 15 ha. This will comprise an income of 10% of R34 000, or R3 400. At an average rate of R20 per day and employment for 90 days during the growing season, an additional income of R1 800 can be earned. This would entail a total income of R5 200.

Given the profile of the opportunists, it can be assumed that this type of farmer would negotiate slightly better conditions for providing his land to active farmers, for the sake of this argument 12.5% of the eventual harvest. This would entail R4 250 for his 15 ha unit. To complicate matters this type of farmer could engage in complicated arrangements with inactive landowners for use of their land, to be used by the active farmers. This process has been described in the initial section of the chapter. For the sake of this comparison it would however be sufficient to use a total income of R6 050 per farmer in this group.

This maize enterprise represented in table 7.2.7 therefore derives an assumed 'with project' agricultural income. These values are presented for the base year of 2002/03, when the project is assumed to commence. It can be deducted from table 7.2.7 that the revival of the project could have significant financial benefit, as a net benefit of R4.1 million is foreseen in terms of the enterprise budgets of the different farmer types. However, it is assumed that a collaborative project would lead to a 10% cut in input cost, through an assumed subsidisation by the NWC, as one of the main stakeholders in the project and the foreseen buyer of the product. This will lead to the total project income achieved by the farmers involved as described in table 7.2.7, to increase from R4.1 million to R5.9 million.

#### 7.2.3.2.3 Project level analysis

This type of analysis provides information on the allocation of funds spent to create the environment (the project) in which the farmer will be operating. Project benefits and costs of the agent (i.e. NWC and NWDACE) must be quantified. All direct project benefits (yields, sales) and costs, i.e. running costs (salaries, etc.), investment costs and opportunity cost for capital (a realistic discount rate), must be determined. The main focus would be on investment, running and production costs. At this stage it is difficult to ascertain the value of such a project, as assumptions regarding these cost would be mostly speculative without engaging the relevant stakeholders. This would entail detailed negotiation to develop a collaboration contract. However, a rough calculation determining cost requirements and benefits of such a project is attempted.

Most of the farmers that will take part in the project are entrepreneurs, for which an average yield of 2.5t/ha is predicted. The commercialising farmers, for which an average yield of 3t /ha is predicted, constitute 20% of the active farmers. An average yield of 2.6 t/ha is therefore assumed for the project as a whole. The maize price during recent years fluctuated significantly from more than R2000/ton to below R800/ton. An assumed average maize price of R810/ton is used in this analysis. The total project income achieved by the farmers involved is calculated as R5.9 million. In terms of running costs, it is assumed that the NWC, NWDACE and the community will each appoint a manager to be

responsible for the day to day management of the project, in close collaboration with the representative management committee described in the institutional analysis. The salaries of these three managers will constitute the running cost of the project. The investment costs of the project, which includes overhead and capital expenditure, infrastructure, equipment, demarcation, etc., will be relatively low, as described previously. However, the upgrading of the current infrastructure, basic equipment and a comprehensive HCD programme will constitute an annual investment of R2.75 million. The annual cost of providing capital, at a realistic discount rate, for the 54 active participants in the scheme will entail another R250 000. Incremental net benefit flow is subsequently calculated (see table 7.8) by subtracting all relevant costs from the net benefits:

Table 7.8: Financial analysis of the proposed revived Sheila project:

| Total income | Running cost | investment cost | Loan cost | Total cost | net benefit | Real benefit | Real without | Incremental net benefit |
|---|---|---|---|---|---|---|---|---|
| 5 937 004 | 750 000 | 2 750 000 | 250 000 | 3 750 000 | 2 187 004 | 2 187 004 | 1 032 640 | 1 154 364 |

This data must be available for a number of years to be able to determine an IRR and NPV. However, it can be assumed that a significant reduction in input costs is viable, and given the indication of net benefit established, it can be deducted that with sound management, the project could have a significant financial benefit. The incremental net benefit flow, calculated by subtracting all relevant costs from the net benefits would most probably be substantial.

#### 7.2.3.2 Economic Impact: efficiency analysis

This analysis determines the economic efficiency of resource use and incentives with benefits and costs evaluated at prices that reflect the scarcity of inputs and outputs. It is used to determine whether the project is likely to contribute to the broader economy. As argued previously, shadow prices should be used in cost-benefit analysis only when the market prices of products and services clearly are distorted i.e. do not reflect their scarcity value or economic contributions. It has been established that market prices provide an accurate indication of the scarcity of products and services. It is further assumed that all inputs are bought under competitive 'free' market conditions while labour cost (wages) is also determined in a competitive market and also not shadow priced. As most of the land is currently lying fallow, the price of land was not included as a cost. During 2000 and 2001 the average world price of maize was $88.22 and $89.61 respectively. Import parity prices could be determined by adjusting these prices for transport and other relevant costs and for the exchange rate. Together with the cost of capital, this would signify the only variance from the financial analysis. For the purpose of this study, an in depth analysis is not attempted, but will have to be dealt with, once certain aspects related to costs and co-operation have been negotiated between stakeholders. This would provide the data relevant for such an analysis. It can therefore be concluded that this proposed project, signifying a reduction in cost, entails a profitable investment to all stakeholders envisaged, advantageous to the economy of the region and the province.

## 7.3 Indirect impact

All impacts stemming from linkages such as employment, scale effects etc., related to collection, value adding, distribution and supply of direct products, are indirect impacts. These impacts will result if the proposed project is planned, implemented and managed according to the model described in this study, and especially as they have been made practical in this chapter. Quantifiable and non-quantifiable (intangible) effects are involved. Intangible benefits are real and reflect true values although they do not lend themselves to valuation. However, because intangible benefits are a factor in project selection, it is important that they are specifically identified and described.

### 7.3.1 Spillover and linkage impacts

An argument of this study was that agriculture has strong contributions to make to the South African economy in terms of value added. In a study by Eckert, Liebenberg & Troskie (1997), it was established that for each R1 of additional demand for cereals, added value of R1.02 was generated, whilst 27 cents was contributed to government revenue. In general, agricultural production and multipliers make larger contributions to household incomes, in a more egalitarian way, than any other economic sector. These findings support the argument that a grain crop based project would enhance livelihoods in the Sheila area.

Ngqangweni, Kirsten & Delgado (1999) also found that agricultural growth linkages were particularly strong. A positive stimulus of R1 in household income (through for instance a policy or institutional change; i.e. a project), would lead to 35 cents of additional spending on farm non-tradables and 63 cents of additional income from spending on non-farm non-tradables. This entails a total multiplier effect of R1.98, of which 98 cents is the net extra growth from spending on demand-constrained items. Therefore, there is significant extra growth potential through boosting rural incomes, which in turn would stimulate demand for non-tradable goods and services. Under-employed resources would in this manner be brought into production, again providing a strong argument for reviving the project approach at Sheila.

Quantifiable or tangible spillover or linkage impacts of a project will therefore result through increased utilisation of input and output markets, increased spending as well as improved housing and health. The project will demand an increased supply of raw materials, especially fuel, mechanisation parts, seed and fertiliser. It would also require an effective market for goods and services. At least a portion of the higher profits will be invested in the community, through expenditure. This improved trade will affect various non-participants. This has been partially described in the section dealing with social impacts. However, the project would also result in various intangible or non-quantifiable spillovers. The project would most probably have a positive influence on the quality of life on the total typology of Sheila, as well as on those not directly involved in agriculture. As the procedures and technologies used at the project would have wider applicability, the project will also have a significant demonstrational value. It is likely that another spillover effect would be a more positive attitude towards agriculture and life in general, leading to less stress and improved confidence.

### 7.3.2 Environmental impact assessment

A reintroduction of the dryland-cropping project might lead to more extensive use of fertilisers that could have long-term negative effects on the soil. To incorporate this externality, physical effects on the soil would need to be monitored so that their economic impact could be estimated. Changes in the soil status as affected by fertiliser (which in the past has been used sparingly) as well as pesticide movement through soils are difficult to quantify. These are determined by several factors, such as specific soil characteristics (physical and chemical), properties of the soil, the climate, crop management practices, etc. It is well known that herbicides have a detrimental effect on soil microbes and continued, high levels of herbicide usage can negatively affect the soil capacity to support crop production. This aspect must be investigated to develop an appropriate counter-strategy. If the project is to be re-instituted and run according to optimal production practices, these impacts could be significant and a scientific effort must be made to generate information regarding such impacts, also in terms of their impact on the physical, biological, and economic diversity of the area.

With the *ex post* environmental impact assessment, it has been determined that no significant negative or positive impacts were evident. Given the soil structure and texture, the relative low fertiliser rates and the lack of erosion, the project had little significantly negative impact on the soil resource. However, given the increased agricultural activity that is foreseen if the project would become reality, soil degradation, entailing the loss of nutrients, could become an issue if sufficient effort is not made to adequately replenish these nutrients. These effects are mostly site specific, but would affect soil productivity. If these impacts do occur, they would be reflected in yield losses and must therefore be carefully monitored. It is proposed that regular soil surveys be undertaken to ensure that the soil status is kept within an acceptable range so that this resource remains available for sustainable utilisation.

In general soil erosion at the project area is negligible, mainly because of the topography, the stable soil structure and the absorbing soil texture, which limits significant water erosion. However, as the majority of soils have a low clay percentage, they are to some extent subject to wind erosion. Care has to be taken, especially during spring when strong north-westerly winds are often evident in the area. Given the fact that optimal planting occurs late in November and often takes place later, wind erosion should not be a significant problem and the cultivation process could be adapted to take this into account.

No other significant environmental impact is foreseen at the Sheila site, except that some loss of biodiversity could be expected due to land cultivation. Given the potential of the land and the need for it to support the local communities, this is a trade-off that has to be made. With regard to off-site effects, concerning individuals and communities downstream from where the project could take place, no significant impact can be distinguished. No downstream silting up of reservoirs or rivers or a reduction in water storage capacity is probable. In the same vein, no significant atmospheric or other pollution resulted from the agricultural activity is foreseen.

## 7.4 Application of the systemic impact analysis framework

This project assessment framework (as described comprehensively in the methodology chapter and used in the ex post situation dealt with in chapter six) takes the form of 11 questions. The answers illuminate the envisaged success level of a project with regard to the norms raised. Regarding the policy environment of the project, four macro-related questions are answered:

1 Do project objectives fit the goals of beneficiaries, financiers, stakeholders and government?

The main objective of all farmer groups would be to utilise the extensive land lying fallow through obtaining mechanisation services and negotiating sharecropping contracts to increase cropping areas. As this relates to access to services and resources, it conforms to the agricultural sector strategy. There is therefore a fit between the objectives of farmers and that of government. Potential implementing agents; the NWC, Landbank, Grain-SA and the NWDACE, have all publicly expressed their support of these objectives, as complemented by their policies and actions, illustrating an objective fit. The project offers an opportunity for all role-players to engage in development in a sustainable, co-ordinated manner. Within this scenario there is scope for stakeholders to have other objectives. It is acceptable that a profit motive exists for all stakeholders. However, it is imperative that these objectives are subordinate to the principle of development of the Sheila farmers.

2 Does the project correspond with national, regional and organisational policy?

As mentioned under question one, national and provincial agricultural policies have as a key strategic intervention, the facilitation of access to services and goods. In chapter 5.5.1 provincial policies are specifically described as food security, access to services, competitiveness and accessible markets. The proposed project deals with these issues and is an opportunity to test a scientifically determined model for small farmer support. The policies of the other stakeholders involved, all have as a priority provision of services to resource poor farmers and broadening their involvement in the sector.

3 Does it fit the existing programmes of the organisation/s involved and is infrastructure available?

The project approach is not new to any of the stakeholders, but this proposal deviates significantly from previous efforts. The proposed level of farmer participation is although non-negotiable, a change from previous engagements in development. While most of the elements proposed are not foreign to stakeholders, having all of them institutionalised in one project will be unique. Given the need for an appropriate model of support to resource poor farmers, the conducive environment established, and the expressed desire of stakeholders in the industry to facilitate agricultural development, this project would fit the programmes of stakeholders. The infrastructural requirements can be met, as willingness to extend resources has been evident, while existing infrastructure could still be used or upgraded.

4 Is there indication of government/market failure and how will it affect the project

Although small farmers in theory have access to all the services that the commercial sector has, in practice there are still great disparities. As described, the resource poor sector is in fact less supported than during the previous dispensation, due to the termination of most projects and

programmes. This lack of practical support se can be viewed as government and market failures, as access to markets and services are in fact constrained. This could be addressed through the project.

Following these policy level questions, seven micro level questions are addressed:

5 Who would be the appropriate institution to finance the project?

A combination of private and public financing is proposed for the project. In terms of pubic sector involvement, the provincial Department of Agriculture has a significant role to play, especially in providing technical support (capacity building, technology transfer). It is not proposed that a management function is provided for through public funding. This function would be better provided by the NWC that has expressed interest in such an option. As described, a transparent participatory management system involving all role-players, including farmers is proposed. Although NWC could finance input costs to an extent, the Landbank and the Department of Land Affairs could contribute in financing the project. Involvement of the Grain industry and Seed Suppliers has been discussed in stakeholder deliberations. Therefore, the public fund should provide services (indirect funding), whilst the private sector should finance the project, in collaboration with the Landbank, as public partner.

6 Participation is crucial: Do beneficiaries support the project (own it) and take responsibility?

Farmers in the area have for the past four years discussed the possibilities of revitalising the project and made efforts to organise a collective for input supply. This has been relatively unsuccessful in terms of effectively linking key stakeholders. However, beneficiaries do fully support the concept completely as the many initiatives indicate. Leader farmers do also recognise some of the key failures of previous attempts, specifically the unrealistic level of input-subsidisation, the management provided and the low level of participation. Many want to play a more active role in a new approach. What is a hindrance is that there is political undercurrent in the area. Both the headmen (traditional leadership) and the councillors (political leadership) inadvertently are creating factions in their efforts to revive agriculture. Facilitation of development is often used to gain power. This proposed project should avoid such politics and ensure that all groups are involved and no particular group favoured. This particular community appreciates the principle of being responsible for their own destiny and are aware that focus will not be on handouts but rather on facilitating access. The fact that farmers must take responsibility should be an important part of the HCD process and is accepted in the community.

7 Are benefits predominantly shared in the target group and unintended costs compensated?

As a number of stakeholders are involved, no single party will easily be allowed to gain inappropriately through the project. The government, through the NWDACE should play the role of facilitator and as such, should also act as a watchdog in ensuring that no stakeholder exploits the project for its own gain.

8 Is the project financially affordable?

It has been established that the project potentially can increase profits significantly, provided that certain criteria are met. These include a satisfactory level of social cohesion and security, participation

of active farmers as well as landowners in the management of the project, the integration of stakeholders to the benefit of all concerned and a sound HCD programme to ensure efficient management. This is an achievable ambition, according to all concerned. The NWC has expressed interest in the project, as has the Landbank. In terms of technical support the NWDACE will also be willing to invest in the project. Neighbouring commercial farmers have also expressed interest in developing relations with the developing farmers in the vicinity. In short, the environment is favourable for this development.

9 Is it economically beneficial?

One of the hypothesis of the study deals with integration of stakeholders to lower costs. Within the proposed project scenario, it is precisely this integration that should enhance efficiency. This process is envisaged to create an efficient input and output market. The institutional and capacity building programme envisaged should also impact favourably on the efficiency of farmers and the project as a whole, whilst the involvement of private sector stakeholders would also enhance efficiency, to ensure that their investment bears fruit. Critical would again be the successful institutionalisation of the project cycle.

10 Is the project sustainable (economically, socially, and environmentally)?

The fact that participation is a non-negotiable principle of this proposal enhances the social sustainability of the project. With recognition of diversity and innovations that recognise these differences, sustainability will be enhanced. Ccommunication will enhance trust and security, vital elements required for sustainability. If the project proponents can 'sell' the concept to the community and ensure broad participation, this could be achieved. This area is not overly prone to environmental disturbance, but monitoring, particularly of the soil resource, should be an aspect dealt with.

11 Is it the best alternative i. e. is it the optimal solution to the identified problems?

In this study a strong argument has been put forward that farmer development must be based on scientifically evaluated principles. Through this study it has been established that

I: Agriculture has a key role in the transformation of the area and its economic development.
II: A focus on access and participation is required and should be facilitated
III: A facilitating policy and conducive environment is required.
IV: A prerequisite is quantifying rural diversity to facilitate development.
V: HCD and access can be facilitated through integration to mitigate high cost.

These were further refined into project design criteria dealing with technological adaptations being reconcilable with the social development stage of the community, economic diversity between farmers, the effectiveness of linkages and the emphasis on participation and empowerment. Given the evidence presented in the study and particularly in this section, it is argued with conviction that the redesign of the project, based on these criteria, is the best alternative for the farmers of Sheila.

## 7.5 Conclusions

Given constraints in access to land (resulting from limitations in sharecropping arrangements), credit, mechanisation and agricultural skills, the project approach represents a high potential development model, if the design criteria developed in this study are incorporated in project planning, implementation and management of the Sheila project. Participative processes also led to identification of constraints in social aspects of cultivation, i.e. security and communal relationships. The goal of all groups is to obtain improved livelihoods (for the two poorest types especially) and higher profits (for the two more affluent types). This is achievable through increased sharecropping and thus an increase in the area utilised.

Inactive landowners, the most vulnerable group, have limited access to resources and capital leading to outright poverty and hunger. Opportunists are constrained by mechanisation services which are extremely scarce. Many in this group have also built up considerable debt, limiting access to credit. Entrepreneurs suffer under the communication breakdown, failing mechanisation and access to credit. Commercialising farmers are most anxious to increase their land to enhance efficiency but short-term contracts render it difficult for these farmers to invest in sustainable production.

Intervention strategies were identified and described through LFA. These are improved access to capital and mechanisation, and improved relationships and community organisation to facilitate representation and security. While there are similarities with previous projects, this proposal emphasises participation and HCD. Central facilitation of services and inputs is foreseen, but individual choice must be facilitated. All stakeholders should ultimately be profitably involved. Farmers must be selected on ability, track record and commitment through empowerment of participative, homogeneous study groups. A management committee should be representative of all stakeholders to ensure transparency.

Addressing the concerns of farmer types in this typology would not ensure a successful project and improved livelihoods of all those concerned. Facilitating lower transaction costs through integration would also not guarantee this, nor would a combination of both these issues. However, if these issues are dealt with and a conducive development environment exists, enhanced productivity, profitability and growth should result. Such a project constitutes a major step forward in terms of entrance into a competitive market, as it facilitates support and guidance of committed farmers into the industry. Expected increases in production, food security and profit should impact on employment, trade etc, improving livelihoods. A portion of the higher profits will be invested in the community, through expenditure. This improved trade will impact on various non-participants.

This systemic assessment framework highlighted the potential of the project: objectives of farmers and stakeholders are reconcilable – all parties can gain significantly. The project corresponds with policy and is an opportunity to test a support strategy based on the criteria of recognising social realities, diversity, linkages, institutionalised participation and empowerment. Disparities in access to services are addressed. The project should increase profits if efficient management is provided and should contribute to financial and economic well being of farmers, and broader society. Lastly, the level of participation advocated enhances both the social and the economic sustainability of the project.

# CHAPTER EIGHT: REFLECTION

## 8.1 Introduction

This study's aim was to develop a redesigned project model to provide a support framework for the diverse developing agricultural sector in the North West Province of South Africa. The model developed is based on two hypotheses; that the project approach should account for economic diversity in an agricultural community and that integration between role-players is required to facilitate access to resources and services.

In chapter one, a background to the study, the problem statement and the subsequent hypotheses were provided. Chapter two dealt with a comprehensive literature review, relating the study to agricultural development and agriculture's role in broad economic development. It subsequently focussed on the history of agricultural development in SA, its policy evolution and the particulars of its small-scale sector. This led to a specific focus on diversity in the agricultural sector, an important aspect isolated in this study. Chapter three confirmed the vision, as expressed by Tomlinson during the 1950s, that facilitation of access to resources and services constitutes a strategy to empower a small-scale farmer sector. The project approach embodies such an integration model, isolated as of particular potential for small-scale agricultural development. Specific findings or lessons from agricultural development history were distilled into design criteria for a redesigned project approach. These were linked to the hypotheses that support focused on farmer types and integration through projects to facilitate access, is required. This strategy was described as a revived project approach that deals with economic diversity and integrates stakeholders to address high cost. This strategy entails that the project planning cycle is extended, to include the project design criteria condensed from lessons learnt.

Chapter four described the comprehensive quantitative and qualitative methodology for analysing the case study. It was argued that a quantitative analysis alone would not be fitting for the study and qualitative procedures played a major role in analysis. In chapter five the environment in which the case study is situated, is provided. The historical background of the area, agricultural history and support structures are described. A profile of the diverse farmer continuum was also provided. Chapter six dealt with the *ex post* analysis of the Sheila project. This was the largest dryland-cropping project ever attempted in South Africa and eventually covered most of the northern half of the Ditsobotla district. Various impacts were determined. In chapter seven the lessons learned from the literature and the *ex post* analysis, are incorporated in an *ex ante* analysis of a revitalised project at Sheila.

This final chapter will provide a concise description of the lessons learnt from agricultural development history, the methodology used, the findings of the case study and the proposed way forward. It will deal specifically with the reasoning behind a revision of the project approach as model for development, and the consequent project design criteria. Finally, these are included in the description of a revived project approach for the Sheila scenario.

## 8.2 Proposing a new approach for agricultural development

Given the political history of South Africa, a consensus amongst professionals in economic development is that a more equitable dispensation is required in the agricultural sector. Although significant progress has been made during the past decade, the main problems, unemployment and poverty have not been adequately addressed.

As a significant number of poor and unemployed citizens reside in rural areas, agriculture must contribute to development. However, historically agriculture's role in development is underestimated and under-exploited, despite its proven direct and indirect role in economic transformation and growth (with equity).

Establishing the entry of small-scale farmers into mainstream commercial agriculture is therefore a priority. This requires a comprehensive strategy, as this sector has been severely constrained by policy considerations. Although support services are theoretically now available to all type of farmers in South Africa, historical biases still result in inequitable access to services. Although many factors are relevant, production cost is the one issue that is inhibiting agricultural growth in the small-scale sector.

Integration through innovative co-operation in the production chain provides a model with significant potential. However, the project approach, that facilitated precisely this type of integration, does have a mixed track record in agricultural development. Reasons for this were investigated in this study and in this process it was hypothesised that quantification of rural diversity is required in determining appropriate support strategies. It was also hypothesised that integrating farmers and stakeholders, would address the constraint of high production cost.

In developing a redesigned project approach to facilitate resource poor farmer access to resources and services, specific project planning and implementation design criteria were defined to be incorporated in a redesigned project approach. These were then investigated in an analysis of the case study, Sheila. This study ultimately focused on this project approach as a service delivery strategy for the NWDACE. It is proposed that the project cycle should be extended to include the design criteria defined. This strategy embodies an innovative approach with extensive potential to facilitate agricultural development

## 8.3 Lessons from history, policy and experience

The main agricultural development lessons applicable to this study and distilled from a focused literature review include:

- The recognition of agriculture as an important cog in the economic development wheel.

- Agricultural transformation's increasing focus on human capital development in order to improve livelihoods. As HCD is the most important determinant for success in agriculture, this aspect must form a key part in any development strategy.

- Recognition of the importance of the social and economic development status in a particular agricultural community. Depending on the transformation phase, public investment should be used to stimulate production, activate linkages and multipliers, or streamline marketing. Flexible, efficient delivery systems and employment creation are priorities.

- Recognition of government's key role in strategic design and implementation of rural development strategies, as it was found that in general, agriculture has not yet fulfilled its potential as a catalyst for broader economic development.

- Recognition of the major disruptive effects of HIV/AIDS on agricultural production, a pandemic which impacts on a significant percentage of the South African population.

- Recognition of the unique social reality in South Africa, that agriculture most often plays a supplemental role. However, real participation in the sector must be enhanced if development is to be achieved. Appropriate technology must be continuously developed and transferred, but any development initiative that fails to adapt to the social environment, is bound to fail.

- The view that rural poverty is the result of the backwardness of smallholder agriculture, is rejected. Experts agree that small-scale farming can be viable and that emerging farmers can contribute significantly to production. Facilitating small-scale farmer empowerment should therefore be a key initiative in reducing poverty and facilitating growth.

- The acknowledgement of diversity as a determining factor in the agricultural population of South Africa. This diversity must be dealt with effectively, as the small scale farming community cannot be treated as a homogeneous group. Farmers differ in approach, as a result of differences in access to resources and services. Categorising is necessary to facilitate appropriate support and avoid technology development for the non-existent 'average' farmer. A typology scientifically links social diversity to technical change, by contextualising and focusing intervention required for different types. The approach of describing diversity could address the exclusion of households, due to ignorance of their specific constraints.

- An analysis of South African policy established that a major aim is rapid economic growth, with equity. Recently agriculture's crucial role in development has been acknowledged through innovative policy reforms.

- Policy to reverse discriminatory legislation and improve participation was complemented by innovative strategies to enhance equity and participation, competitiveness and sustainable resource utilisation. The private sector is actively brought into the development scene as it has a key role to play in empowerment and participation.

- The vital role of research and capacity development has recently been given policy priority, with a substantial increase in budget allocation.

- Roughly fifty years ago, Tomlinson (today recognised as a visionary in the field of agricultural development) proposed the facilitation of access to resources and services (which basically represents a project approach), as the tool to empower small-scale farmers. Unfortunately his proposals were not recognised and it took roughly another half century before policy transformation finally did create an environment conducive for a viable small-scale sector.

## 8.4 The project model

Given the political history of this country, small-scale producers have limited access to support and land. Democratisation in practice did not fully rectify the situation, specifically regarding entrance into the competitive global market, associated with high costs. Innovative strategies to facilitate small-scale farmer access to resources and services must therefore be developed. It is argued with this study, that integration between role-players in the agricultural field will lower costs, and facilitate access to the required services and resources.

Productivity gains by reducing transactions cost are specifically required. The appropriate institutional solution should involve a mixture of public and private involvement. Integration within the value chain is a promising avenue of growth. These findings led to a re-evaluation of an obvious integration model: the project approach, traditionally facilitating co-operative management, with central provision of services. Analysis established that although mistakes were made, particularly with regard to lack of empowerment and participation, the approach is an attractive alternative for bringing small-scale farming into mainstream agriculture. The focus in a redesigned model should be on facilitating access and participation of homogenous groups. Accountable "implementing agencies" are required. This capacity is currently missing and must be developed. The project approach is an ideal instrument to 'unlock the potential' of a developing area, through managerial, institutional and other inputs, for optimal agricultural production from participants.

Previously capital-intensive development projects often failed, in essence due to a failure to adapt to social reality. The project cycle must therefore be extended to include the design criteria distilled from development history. This includes facilitation of linkages, co-ordination, participation, classification and empowerment. In this manner top down weaknesses are eliminated, local knowledge is incorporated and commitment, sustainability and utilisation is enhanced. Group dynamics create additional benefits and must be facilitated while communication and linkages must be specifically addressed.

Projects should bring direction to development and facilitate managerial skills, productivity and empowerment. It is argued that the redesigned project approach constitutes a viable institutional setting as a vehicle for support delivery. The need for services integration, recognition of diversity and linkages, and the role of participative processes, all entail crucial aspects that are facilitated in an adapted project approach. If implemented with commitment, this adapted project cycle has extensive potential for future development and could indeed be reinstated as the "cutting edge" of development.

## 8.5 Ex post analysis of the Sheila project

The evaluation of the Sheila project since inception in 1977, until termination in 1994 entailed a comprehensive framework, utilising a combination of qualitative and quantitative procedures. This analysis to an extent also reflects the policies in Bophuthatswana before democratisation. Various impacts were determined, including institutional, financial, economical and social impact as direct impacts, an effectiveness analysis, as well as indirect linkages and spillovers.

The Sheila project had as objectives improved utilisation of land, selection and training of contractors, increased efficiency and the formation of primary co-operatives. Participant selection was determined by popularity and farming ability did not play a significant role. Lands were cultivated as one unit with cost division and profits calculated in the offices. Contractors applied for loans through the co-operative. Infrastructure was provided and mechanical and other equipment made available. A committee or 'Board of Directors', representing farmers from all the villages, was responsible for liaison and decision making. The commercial co-operative NWC, in collaboration with the Bophuthatswana government was profitably involved in input and market provision. Farmer involvement was extremely limited and centralised management was eventually running the operation. Only 6-10% of landowners were involved in the project at any stage, and then mostly as employees. The project expanded during the early 1980s and approximately 26 000 ha was eventually used in Ditsobotla, which consequently produced 23% of Bophuthatswana's maize consumption.

Farmers expressed satisfaction with the project. Perceived advantages included the availability of mechanisation, credit and management 'doing everything'. Holdings increased significantly in size while yields and returns per farm improved. This resulted in more food, improved housing and income, clean water, healthier children and thus a higher quality of life. Non-participants also felt that they learnt better practices from the project and obtained financial spillover, but recognised that participants were mostly passive.

Implementation effectiveness was determined through logical framework analysis and concluded that although production improved under project management, very little empowerment of farmers was attempted or achieved. Although top farmers did well financially and non-participants were also positively influenced through spin-offs, the majority lagged behind due to a lack of commitment and training. A substantial HCD programme did not complement the focus on production.

Establishing independent farmers was difficult to achieve, seen in the light of the strategy and political pressure. The design criteria developed in this study, specifically those dealing with co-ordination, linkages and cost saving were actively attempted during the project's duration, but although participation and HCD were striven for in theory, this did not feature in practise. Diversity in the community, sustainability and social realities were not recognised. Insufficient linkage and communication between the various stakeholders was soon evident. When the desired results were not achieved, political pressure to achieve higher production increased. During 1991/92 a comprehensive re-planning took place for which to qualify, a farmer had to work 75 ha, obtainable through sharecropping agreements. Again, the design criteria that were obviously not dealt with

include participation, co-ordination and diversity. Technical changes steadfastly failed to account for social realities.

Farmers today face remarkably similar constraints as before the project, after 18 years of project support and eight years as independent farmers. Sharecropping still is the major form of agriculture, but a significant drop in active farmers is evident since the early 1990s. The average yield decreased from over 2tons/hectare during the project years to ±1.7ton/ha.

During 2000 the average household had between five and six members and average monthly expenditure on essentials amounted to roughly R1100 per month. Seventy six percent of households involved had access to electricity, 83% had television and 32% access to a phone. Only 26% had access to water in the home, but most had access to a public tap within 200m. The largest group in the survey (46%) had an education level of grade 8 to 12. All respondents still viewed themselves as farmers, although in total, 89% stated that they supplemented their agricultural activities. The vast majority (85%) believed that the project was beneficial, although only 76% perceived that they learnt agricultural skills during the project.

During 2000 the average land size per active respondent was 33ha. More than half the respondents had access to 15 ha and only eight individuals had access to more than 100 ha. The average area per respondent planted was less than 19 hectares. A quarter of all respondents regularly rented land. Forty percent of farmers owned at least one tractor, but in most cases, the state of mechanisation was poor. The average production for the 123 respondents, for maize and sunflower was 0.7t/ha and 0.4t/ha respectively. The most serious constraint in cropping was identified as access to finance. This was linked to the high level of debt in the community and the lack of security inherent to the tenure system. Drought, mechanisation (linked to financial constraints), theft and conflict within the community were also perceived as serious constraints. Local farmer's organisations were poorly developed. Large variation in yields and profits was an indication of variation in farming aptitude and attitude towards agriculture. The design criterion; dealing with diversity was not recognised. Although livestock plays a part in rural households, in most cases this did not constitute a production-oriented enterprise.

In financial and economic terms, the first five years of the project were successful as illustrated by benefit cost ratios of roughly 1.35. However, individual participants achieved large variation in yield and profit. Subsequent financial and economic analyses established that profit margins for the project as a whole decreased, while the differences between farmers remained pronounced. The major objective: to develop arable potential and increase self-sufficiency was achieved temporarily, for a limited number of participants and at extensive public cost. Eventually the lack of empowerment made the initially impressive project non-sustainable.

Despite valid criticism, the project had spillover and linkage effects. More activity was evident in supplier and processor sectors and profits generated through the project had a broad effect, both within and outside the project area. Apart from direct job opportunities, many informal activities took place, especially around the cultivation process. Procedures and technologies used in the project had

wider applicability and certainly induced changes in the organisational and management systems in the area. Other intangible benefits included an improved quality of life and improved confidence. The community was in general better off in terms of quality of life than people in most other wards of the province. The attitude towards the project and its influence on rural life was generally favourable.

The DBSA's systemic framework for project analysis captured the main failures of the project: the objectives of participating farmers were not always properly addressed, impacting negatively on the sustainability of the project. The level of subsidisation and debt write-off did not prepare farmers for a free market scenario and contributed to the current situation where most farmers with farming skills are struggling with debt. The main failure of the project was that farmers never accepted ownership or responsibility. In terms of financial and economic affordability, high levels of variation between individual farmers were always a concern. Given the current situation where farmers are in general ill equipped to farm, the project was obviously not sustainable. However, the project was potentially the optimal solution to the identified set of problems and objectives and the basic concept remains sound.

## 8.6 Towards a new project design for the Sheila project

As part of a LFA, a participative group process with representatives of the four types of farmers found that sharecropping plays a central role in production in the area. The only manner in which farmers could access more cropland, is through four types of sharecropping: These are pure land hiring, a sharecropping contract for part of the harvest, equal contributions from landowners and cropper or hiring of cultivation services by the landowner.

Whilst much land in the area is lying fallow, access to this land is limited by the tenure system and social constraints such as contract failures and security issues. Apart form this land access constraint, all problems identified relate to capital, mechanisation, security and communal relationships. Strategies are required to rectify the main issue; limited contractual cropping and therefore limited income. These affect all four types of farmers identified: Inactive landowners, the most vulnerable group have limited access to resources and do not qualify for credit. This leads to poverty and hunger. Opportunists occasionally utilised land through contracting, but mechanisation services are becoming scarce. Many have built up debt, limiting access to credit. Entrepreneurs suffer under the communication breakdown, failing mechanisation, access to credit and theft. Commercialising farmers suffer most from the breakdown in relationships and miscommunication.

The main goals established; improved production and higher profit margins are achievable through increasing sharecropping contracts and thus the area utilised. More cost-effective use of resources and income from currently fallow land will result. A proposed intervention would to an extent be similar to previously used capital-intensive projects, but with a shift in focus to participation and HCD. Initial subsidisation might be warranted, but all stakeholders should ultimately be profitably involved in the project. A concurrent empowerment process of all farmer types, organised in study groups, must be dealt with. Central facilitation of services and inputs is foreseen, but individual choice and action must be facilitated. A production co-operative, electing a representative, empowered management committee and production through sharecroppers remains a viable organisational structure. Critical is to allow for optimal individual farmer decision-making. Increases in production, food security and profit should impact on employment, and economic activity. Organisational and institutional arrangements will facilitate improved relationships and eventually increased profit. This proposed project could lead to an improvement in the quality of life, directly through increased ability to pay for services, food, transport etc., and indirectly through better nutrition, health, education, etc.

In terms of the systemic impact framework, the objectives of stakeholders can be reconciled: Farmers need access to production means while other role-players could be profitably involved, while contributing to development. This intervention corresponds with policy, as access facilitation features prominently. Beneficiaries support the concept and the state could support the project to increase profit, provided that efficient management is facilitated. Enhanced economic well being of farmers and broader society is within reach. As participation is a non-negotiable principle, it enhances social and the economic sustainability. The area is not prone to environmental degradation, but monitoring is required.

## 8.7 Concluding remarks

A recent development review paper from Imperial College at Wye (UK) supports the key findings of this study: It was established that although agricultural growth historically has been a major force behind poverty reduction in rural economies, smallholder agriculture has stalled in most of Africa. The urgent need for adaptation of policy is undisputed. Experts agree that agriculture can and should play a critical role in economic development, but recent records are poor in terms of the broad-based agricultural growth needed to counter rural poverty. Studies from Imperial College examined these issues with a particular focus on the need for institutional development (Dorward, Kydd, Morrison & Urey, 2002; Dorward, Kydd, Morrison & Cadisch, 2002; Kydd, Dorward & Poulton, 2002). Principal conclusions include that agriculture remains the best option for promoting rural economic growth and poverty reduction in poor rural areas, when compared with limited alternatives. Four key policy themes are crucial:

(i) Diversity: different technical and institutional solutions are needed to match varying agro-ecological, social and institutional conditions with differentiated policies.

(ii) Institutional development: policies addressing high transactions costs and low profits that constrain market development are required.

(iii) Trade: in addition to the need for developing economies to open up their agricultural markets, protection or stabilisation for domestic producers must be considered.

(iv) Research: technological and institutional innovations are needed for economic development.

These recent empirical studies strongly confirm the hypotheses and findings of this thesis and support the philosophy of the objectives. It further supports this study's strong argument that farmer development must be based on scientifically evaluated principles. The policy themes isolated at Wye are remarkably similar to those established by this study:

(i) Agriculture has a key role in economic growth;
(ii) Facilitating policy is emerging and must be exploited;
(iii) Quantifying rural diversity is a prerequisite;
(iv) Focus on access and participation through integration is required;
(v) HCD and access can be facilitated through integration to mitigate high cost.

Given the evidence put forward, the hypotheses of this study are accepted: The potential of the project approach to facilitate focused support and provide real access to services and inputs is indeed established and a redesigned project is the best alternative for the farmers of Sheila. It is however crucial that the lessons of the past, as distilled into the design criteria, are implemented:

1 Diversity must be addressed to provide a profile of the client base, identify farmer types and facilitate development of appropriate strategies for each type.

2 Structured co-ordination should facilitate communication and functional linkages, creating cost saving and value adding. Especially integration with the private sector must be facilitated.

3 Participation, facilitating research and the recognition of social realities vs. technical aspects will positively impact on sustainability. Access to specialists and demonstrations are required.

4 In terms of empowerment, capacity development, especially related to management, is a key factor for success in farming and a scientifically designed empowerment programme must be rigorously implemented.

The main goal for Sheila farmers and the larger community is to improve their livelihood; achievable through increasing sharecropping contracts, facilitated by stakeholder integration. Improved access to capital and mechanisation through integration in the production chain, improved relationships within the community through institutionalising forums to streamline sharecropping, and improved communal capacity and organisation to facilitate representation and security, are specific interventions required.

This proposal enacts characteristics of previous attempts, but focuses specifically on participation and capacity development. Central facilitation of services, but with individual decision-making must be facilitated: farmers act economically rational if support is available and demand driven. However, farmers should be classified on farming ability, experience and potential. A representative management committee should be installed to ensure transparency. This proposal therefore constitutes a model for small farmer entrance into a competitive market. Expected increases in production, food security and profit should impact on employment, trade and eventually quality of life, also indirectly benefiting various non-participants.

Finally, small farmers with potential to compete in the marketplace, in practice do not have access to all the services and resources that would enable them to do so. This failure can be addressed through a revived project approach. The state should act as facilitator and watchdog. Such a project can increase profits if efficient management is facilitated. Participation will enhance social and economic sustainability. This proposed framework needs to be practically developed in a consultative process involving all Sheila role-players, but if based on the design criteria developed in this study, could significantly improve the livelihoods of the community, as well as those of others in Ditsobotla and the province.

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ANNEXURE 1

SPRINGBOKPAN – LANDOWNERS:

| NAME | HECTARES | ACTIVE? | NAME | HECTARES | ACTIVE? |
|---|---|---|---|---|---|
| Bereng, Hendrick | 10 | N | Bike, Miriam | 10 | N |
| Dieta, Ado | 7.6 | N | Dieta, Bon | 7.6 | N |
| Dieta, Bunita | 7.6 | N | Dieta, Deborah | 15 | N |
| Dieta, Gertrude | 10 | N | Dieta, Jeremia | 10 | N |
| Dieta, Ishmael | 10 | N | Dieta, Johannes | 10 | N |
| Diphore, Emily | 10 | N | Dlamini, Fan | 25 | N |
| Dlamini, Agnes | 25 | N | Dlamini, Elijah | 10 | N |
| Dlamini, Anna | 10 | N | Dlamini, Enoch | 10 | N |
| Dlamini, Dina | 10 | N | Dlamini, Frank | 10 | N |
| Dlamini, Elija | 10 | N | Dlamini, Kilnerton | 10 | Y |
| Dlamini, Obed | 10 | N | Dlamini, Silas | 10 | ?? |
| Gabonhore, Simon | 7.6 | N | Joe Benjamin | 7.6 | |
| Joe, Hendrick | 10 | N | Joe, Joseph | 10 | Y |
| Khaki, William | 10 | N | Khumalo, Elija | 10 | N |
| Khumalo, Elisabeth | 10 | N | Khumalo, Robert | 10 | N |
| Komme, Maria | 10 | N | Kubelo, Joniah | 10 | N |
| Kubelo, Norah | 10 | N | Letlhokwe, Elisabeth | 10 | N |
| Mabote, Elina | 10 | N | Mabuntra, Isaac | 7.6 | N |
| Mache, Abel | 10 | N | Mahole, Meniah | 10 | N |
| Mahole, Meriah | 7.6 | N | Mahole, Simon | 10 | N |
| Mahote, Lenah | 10 | N | Mahute, Betty | 10 | N |
| Maire, Isaac | 10 | N | Majole, Elias | 10 | N |
| Majole, Mirriam | 10 | N | Majole, Robert | 10 | Y |
| Majole, Simon | 10 | N | Makgweng, Ketura | 7.6 | N |
| Manele, Abel | 10 | N | Manhete, Angelina | 10 | N |
| Mankwe, Elisabeth | 10 | N | Marele, Emmah | 10 | N |
| Marele, William | 10 | N | Maropedi, Josiah | 7.6 | N |
| Martuantoe, Emma | 10 | N | Mazibuku, Maria | 20 | N |
| Mbaba, Annah | 10 | N | Mbaba, Annie | 10 | N |
| Mbaba, Banimore | 7.6 | N | Mbaba, Lydia | 10 | N |
| Mbaba, Phillip | 10 | #Y | Mbaba, Samuel | 7.6 | N |
| Mbaba, Thebi | 7.6 | N | Mbaba, Thomas | 10 | N |
| Melamis, David | 10 | N | Melamu, Benjamin | 10 | N |
| Mere, John | 25 | N | Merjaki, Sophia | 10 | N |
| Modire, Stephen | 10 | N | Modise, David | 7.6 | N |
| Moike, Silas | 10 | Y | Mokotesi, Rae | 10 | N |
| Mokwanatle, Daniel | 10 | Y | Mokwanetle, Diana | 10 | N |
| Mokwanetle, Solomon | 10 | N | Moloantara, Abel | 7.6 | N |
| Moloantoa, Jack | 15 | N | Moloantoa, John | 10 | Y |
| Moloantoa, Susan | 10 | N | Molokeng, Dawid | 10 | N |
| Moremong, Abednego | 10 | N | Morhe, Mirriam | 25 | N |
| Morikare, Benjamin | 10 | N | Motaung, David | 10 | N |
| Motaung, Johannes | 10 | N | Motaung, Judith | 10 | N |
| Mothumi, Johannes | 10 | N | Mporiji, Petrus | 10 | N |
| Msibi, Joshua | 10 | N | Msibi, Richard | 10 | N |
| Muthwane, Grace | 10 | N | Mutlwane, Esnar | 10 | N |
| Mutlwane, Shadrack | 10 | Y | Nhlape, Jenny | 10 | N |
| Nhlapo, Mathewu | 10 | N | Nhlapo, Stephen | 10 | N |
| Nkunyane, Maria | 10 | N | Nkunyane, Simon | 10 | N |
| Nkunyane, Solomon | 10 | N | Ntebele E??? | 10 | Y |
| Ntebele, Dorothy | 10 | N | Ntebele, Naphtali | 10 | N |
| Ntebele, Phillip | 10 | N | Peleele, Tom | 10 | Y |
| Pitso, William | 7.6 | N | Polate, Maria | 10 | N |
| Pula, Cecilia | 10 | N | Pula, Ellen | 10 | N |
| Pula, Phanuel | 10 | N | Pula, Sinah | 10 | N |
| Radebe, Magret | 10 | N | Rakgai, Johannes | 10 | N |
| Rakgani, Thomas | 10 | N | Rakgari, Daniel | 10 | N |
| Roborhagh, Anania | 7.6 | N | Sebathenyane, E | 10 | N |
| Sebothenyane, Berta | 10 | N | Sebothenyane, Sarah | 10 | N |
| Segatle, Hendrick | 10 | Y | Sekoto, Jacob | 10 | Y |
| Sekoto, Joyce | 7.6 | N | Sekoto, Pitso | 7.6 | N |
| Sekoto, Rantilo | 7.6 | N | Shongina, Jane | 10 | N |
| Stigling, Hendrieta | 10 | N | Stigling, M | 7.6 | N |
| Stuurman, Joe | 10 | N | Thangtlang, Elisabeth | 10 | N |
| Tlotleng, Martha | 10 | N | Tlotleng, Mogopa | 7.6 | N |
| Tshabadira, Elias | 10 | N | Tshabadira, Michael | 10 | N |
| Tshabadira, Rebecca | 10 | N | Tshabalala, Dorcas | 10 | N |
| Tshabalala, Paul | 10 | N | Tshabalala, Raymond | 10 | N |
| Tshabalala, Sam | 10 | Y | Tshabalala, Solomon | 10 | N |
| Tshabalala, Tom | 10 | Y | Tshabalala, Wilson | 10 | N |
| Weni, Jacob | 10 | N | Weni, Metme | 7.6 | N |
| Xokiane, Isaac | 7.6 | N | Xokiane, Zakele | 7.6 | N |
| Yokiane, Richard | 10 | N | Zwane, Peggy | 10 | N |
| Groot totaal | 1570ha | N | | | N |

SHEILA/VERDWAAL – LANDOWNERS:

| NAME | HECTARES | ACTIVE? | NAME | HECTARES | ACTIVE? |
|---|---|---|---|---|---|
| Base, Aletta | 15 | N | Bokisi, Lesa | 14.9 | N |
| Bokisi, Stuurman | 15 | Y# | Brand, Mina | 15.7 | N |
| Cebekhulu, Eli | 14.9 | N | Cebisa, Ellen | 29.8 | N |
| Cebisa, Gert | 21 | N | Cebisa, Jan | 30 | Y# |
| Cebisa, Josiel | 20.6 | N | Cebisa, (John | 15 | Y# |
| Cebisa, William B | 15 | N | Choabi, Esther | 35 | Y# |
| Dingaka, Erlita | 14.9 | N | Dingaka, Hanna | 29.8 | N |
| Dingaka, Paulina | 14.8 | N | Dipholo, David | 14.9 | N |
| Dipholo, Lenah | 15 | Y# | Dladla, Hilda | 15.7 | N |
| Dlamini, Juliet | 14.9 | N | Dubazane, Solomon | 14.8 | N |
| Ephraim, Xokiana | 15.7 | N | Ganju, Amos | 15 | N |
| Gantjo, Elliot | 15.7 | N | Gumbi, Rosy | 15 | N |
| Hadebe, Amos | 15 | N | Kaudi, Dinah | 20.6 | N |
| Kaudi, Phinias | 15 | N | Kgosimang, Caroline | 14.9 | N |
| Kgosimang, Hermina | 15.7 | N | Khoarai, Peter | 29.6 | Y# |
| Kotlhai, Ferdinand | 14.9 | N | Kubelo, Zacharia | 15.1 | N |
| Latha, Ben | 15 | N | Lefifi, Elsie | 15 | N |
| Legote | 15 | N | Lehapa, Joshua | 15.4 | N |
| Lekabe, Petrus | 14.3 | N | Lekhu, Ben | 14.4 | N |
| Lekhu, Cristina | 14.3 | N | Lemme, Abel | 15.4 | N |
| Lemme, Annah | 15 | N | Lemme, Maria | 20 | N |
| Lemme, Samson | 15.5 | N | Lemme, Shadrach | 15.1 | N |
| Lesabe, Daniel | 29.8 | N | Lesabe, Paulina | 14.8 | N |
| Letebele, Ishmael | 15.5 | N | Lethoba, Josephine | 15 | N |
| Maano, Philemon | 15.7 | N | Maano, Solomon | 20 | N |
| Maano, Stephen | 14.9 | N | Machogo, Maria | 14.9 | N |
| Machogo, Piet | 29.8 | N | Madikiza, Albert | 15.7 | N |
| Madikiza, Sophia | 20 | N | Mahole, Magdeline | 14.9 | N |
| Makhubu, Abednego | 15 | N | Malotane, Sarah | 15.1 | N |
| Marede, Maria | 14.9 | N | Matshe, Jan | 15 | N |
| Matime, Paul | 15.5 | N | Matsego, Phillip | 15.4 | N |
| Matshe, Isaac | 20 | Y | Matshe, Jan (Mogopodi) | 15 | N |
| Matshogo, Rebecca | 14.3 | N | Matsile, Maria | 14.9 | N |
| Mdakani, Lenah | 20 | N | Melane, Mirriam | 14.9 | N |
| Mikokwe, Saria | 14.9 | N | Mkhoka, Celia | 20 | N |
| Mmatshe, Annah | 15.7 | N | Mmitloe, Abinus | 14.3 | N |
| Mmitloe, Andries | 20.6 | N | Mmolo, Anna | 14.9 | N |
| Modikoa, Lazarus | 14.9 | N | Modisapudi, Nellie | 15.1 | N |
| Mofokeng, Martha | 15 | N | Mofokeng, John | 14.9 | N |
| Mofokeng, Thomas | 30 | N | Mohlabi, Ruth | 15.5 | N |
| Moilwe, Lizzy | 14.9 | N | Mokoena, Petrus | 15 | N |
| Molatudi, Nicolaas | 28.8 | Y | Molatudi, Phillip | 15 | N |
| Molatudi, Samuel | 14.4 | N | Molefe, Erikanus (Jacob) | 15 | N |
| Molefe, Johannes | 15 | N | Molema, Bertha | 15.7 | N |
| Moletsane, Elisa | 31.4 | N | Moletsane, John | 15.7 | N |
| Monaisa, Anna | 15 | N | Monaisa, Dorothy | 15 | N |
| Monaisa, Ragele | 20.6 | N | Monatlala, Berlina | 15 | N |
| Monei, Caroline | 21 | N | Monei, Naomi | 15 | N |
| Monei, Sophia | 15 | N | Mongologa, Dina | 15 | N |
| Monoto, Elias | 14.9 | N | Monoto, Tom | 15 | N |
| Monotwe, Elisa | 30 | N | Monowe, Abram | 14.9 | N |
| Montingoe, Christiaan | 15 | N | Montsheng, John | 30 | N |
| Mooketsi, Tebogo | 15.5 | N | Morabe, Dolf | 21 | N |
| Moraladi, Elias | 29.8 | N | Moreo, Nora | 15 | N |
| Moribe, Daniel | 15 | Y | Moribe, Hans | 14.8 | N |
| Moribe, Schalk | 15 | N | Morobe, Annah | 14.9 | N |
| Morobe, Ester | 14.9 | N | Mosete, Jan | 15.1 | N |
| Motloung, Johanna | 30 | N | Motseathebe, Stephen | 15 | N |
| Motsha, George | 15.4 | N | Mpane, John | 15.4 | N |
| Mphoifi, Dorcas | 15 | N | Mpoifi, Lydia | 15 | N |
| Ngesman, Benjamin | 31 | N | Ngesman, Michael | 15.4 | N |
| Ngesman, Clifford | 28.6 | Y | Nhlapo, Jack | 20 | N |
| Nkashe, Aletta | 15 | N | Nkashe, Gerson | 14.9 | N |
| Nkashe, Hofniel | 15 | Y | Nkashe, Jan | 30 | Y |
| Nkashe, Paul | 15 | Y | Nkashe, Petrus | 29.8 | N |
| Nkashe, Selina | 15 | N | Nkosi, Fanie | 15 | N |
| Nkashe, Banius. | 15 | N | Nkashe, Dipuo/Nicolas | 15 | N |
| Nkuna, Sophia | 30.2 | N | Nkutha, Elijah | 15 | N |
| Nqubane, Jane | 15 | N | Ntebele, Phinias | 20 | N |
| Ntebele, Henry, | 20 | N | Ntebele, Nikodemus | 20 | N |
| Ntuli, Roseline | 14.3 | N | Peele, Abel | 29.8 | N |
| Phetla, Piet | 15 | N | Pheto, Johannes | 15 | N |
| Phetoe, Maria | 15 | N | Pule, Abram | 15 | N |
| Pule, Israel | 15 | N | Qala, Andries/Kate | 29.8 | N |
| Qala, Joseph | 15 | N | Qeba, Booi | 14.9 | N |
| Qeba, Jonas | 30 | N | Qeba, Joseph | 10 | N |
| Ralephaleng, Ishmael | 31.4 | N | Ralephaleng, Jacob | 15.7 | N |

| | | | | | |
|---|---|---|---|---|---|
| Ralephaleng, Samuel | 31.4 | N | Ralephaleng, Phillip | 15.7 | N |
| Rapolai, Isaac | 15 | N | Rapolai, Zeth | 30 | N |
| Sekabe, Solomon | 15.7 | N | Sekabo, Emily | 15 | N |
| Sekete, Lydia | 15 | N | Sekoto, Abram | 15.5 | N |
| Seleke, Cornelius | 15.7 | N | Selemogo, Johannes | 15 | N |
| Selemogo, Josiah | 20 | N | Sempe, Emily | 15.7 | N |
| Sereme, Petrus | 15.7 | Y# | Sethole, George | 15 | N |
| Setlhare, Violet | 15 | N | Shadi, Rebecca | 15.1 | N |
| Sheila/Verdwaal | 10 | N | Sibeko, Bessie | 15.7 | N |
| Sibeko, Philemon | 15.1 | N | Syamoholo, Susan | 14.8 | N |
| Tau, Job | 14.8 | N | Thamaga, Simon | 15 | N |
| Thipe, Jonas | 20 | N | Thipe, Marks | 15 | N |
| Tladinyana, Dorah | 30 | N | Tladinyane, Nellie | 15.7 | N |
| Tlhako, Aaron | 14.9 | N | Tlhako, Annie | 14.9 | N |
| Tlhako, Marcus | 14.9 | N | Tolo, Jan | 14.3 | N |
| Tsatsimpe | 14.9 | N | Tsatsimpe, Jeremiah | 40 | Y# |
| Tsatsimpe, Joel | 21 | N | Tsatsimpe, Thatius | 14.9 | N |
| Tshabalala, Ben | 30 | N | Tshabalala, David | 15.4 | N |
| Tshabalala, David | 15 | N | Tshabalala, White | 30 | Y |
| Tshewetetsi, Jacobus | 20 | N | Tshotetsi, Bertha | 20 | N |
| Tshotetsi, Ishmael | 30 | Y# | Tshotsho, Zipora | 15 | N |
| Tswabi, Petrus | 14.9 | N | Vilakazi, Wilhelmina | 15 | N |
| Xokiane, Elisabeth | 15.4 | N | Yane, Johannes | 14.9 | N |
| Groottotaal | 3601ha | | | | |

ANNEXURE 2 **SHEILA QUESTIONNAIRE** Q no: ___

Information is gathered with this questionnaire to understand farmer's constraints. All information is guaranteed confidential and no information will be relinquished to other parties. [SIMBOLS REPRESENT SPREADHEET HEADINGS].

*Date:* _____ *Interviewer* ____
*Respondent (Optional)* _____ *Village:* _____

## ***Land resources***

*In your garden do you* _____ *[1 = grow vegetables/crops, 2=keep poultry, 3=have fruit trees, 4=nothing, 5=poultry & fruit trees, 6= vegetables & poultry, 7=vegetables, poultry & fruit trees, 8 =vegetables & fruit trees) [garden]*

2 *Please fill in the following table concerning your land resources:*

| Land size [*size*] | *Ha planted? [planted]* |
|---|---|
| | |

3 *Do you rent land?* _____ *(1=yes/2=no)* [rent]

4 *If land is rented, what is the price paid: (1=cash/2= a share, 3=both)?* [pay ]

5 Average distance of fields from residence in km: _____ [*km*]

6 *Is the size of your land satisfactory? (1=yes/2=no)* _____ [enough]

7 *Do you have confidence in rental contracts? (Are they upheld?) (1=yes/2=no)* _____[contract]

8 *Is distance to your fields a problem? (1=yes/2=no)* _____ [distance]

## ***Description of the household & family***

9 *Do you supplement your agricultural income? (1=yes/2=no)* _____ [supple]

10 *Have you done other work before farming? (1=yes/2=no)* _____ [job]

11 *How many years have you been farming 'full-time'?* _____ [since]

12 *Farmer's highest educational qualification:* _____ *(1=std 1 or less, 2=std 2-5, 3=std 5-10, 4=post matric)* [educ]

13 *Major expenses (please provide a rough estimate in rand)*

| ***Item*** | ***Average expense/month*** |
|---|---|
| 1. ***Food*** [food] | |
| 2. ***Transport*** [travel] | |
| 3. ***Savings Clubs (Stokvels, etc.)*** [saving] | |
| 4. ***Electricity*** [electri] | |
| 5. ***Phone*** [phone] | |
| 6. ***Instalments (furniture, car, etc.)*** [lease] | |
| 7. ***Leisure (Cigarettes, drinks, etc.)*** [sweets] | |

14 *What is your most common type of transport?* _____ *(1=taxi, 2=own vehicle, 3=bus, 4=cart)* [vehicle]

15 *How many people are sleeping in your house?* _____ [houseno]

16 *How many children are at school?* _____ [school]

17 *How many people residing in your house are unemployed?* _____ [unempl]

18 *How many of your children have already left the house?* _____ [gone]

19 *How many income sources enter the household?* _____ [incomes]

20 *Is there any off-farm income? (1=yes/n2=no)* _____ [offarm]

21 *Does any of the children that left the house, send money home occasionally? (1=yes/2=no)* [remitt]

22 *Do anyone in the house obtain a pension? (1=yes/2=no)* _____ [pension]

23 *Do you have running water in the house? (1=yes/2=no)* _____ [water]

24 *Do you have a TV in the house? (1=yes/2=no)* _____ [tv]

***Crop production***

25 *What would be the ideal time to plough in your area?* _____ *(1=winter, 2=spring, 3=summer)* [plough]

26 *Why don't you plough timeously? (1=late rain, 2=money, 3=late contractor, 4=livestock in lands)* _____ [prevent]

27 *How do you rate your ploughing time? (1=poor, 2=fair, 3=good)* _____ [yours]

28 *Where do you buy inputs?* _____ *(1=local coop, 2=neighbour, 3=other supplier).* [supplier]

29 *Under good conditions, how large would your maize yield be? (t/ha)* _____ [harvest]

30 *How many bags of what crop do you keep per year for household consumption?* _____ [bagshh]

31 *What inputs in what quantities did you use during the past season?*

| | ***Maize*** | ***Sunflower*** |
|---|---|---|
| ***1. Seed*** | [mseed] | [sseed] |
| ***2. Fertiliser*** | [mfert] | [sfert] |

32 *Hired labour during the past season:*

| ***Number of people*** | ***Days*** | ***Wage (R/day) or other*** |
|---|---|---|
| [hireno] | [hiretime] | [wage] |

33 *Crops planted and production achieved in the past two years:*

| | ***Crop**** | ***Ha*** | ***Yield/ha*** |
|---|---|---|---|
| ***1997/98*** | *Maize* | [m2ha] | [m2t] |
| | *Sunflower* | [s2ha] | [s2t] |
| ***1998/1999*** | *Maize* | [m1ha] | [m1t] |
| | *Sunflower* | [s1ha] | [s1t] |

34 *Family labour input during the past season:*

| ***Number of people [***flabour***]*** | ***Days [***ftime***]*** |
|---|---|
| | |

35 *What general type of soil do you have? (1=sand, 2=clay, 3=loam, 4=do not know)* _____ *[grond]*

36 *How do you transport the inputs you buy? (1=own transport, 2=hired transport, 3=tractor & trailer)* _____ *[insetver]*

37 *Do you keep records? (1=yes/2=no)* _____ *[rekords]*

*Do you make use of a contractor? (1=self/2=contractor)* _____ *[megan]*

39 *What do you consider to be the main problem/constraint in plant production?* _____ *(1=weeds, 2=fences, 3=climatic problems, 4=input supply, 5=mechanisation, 6=theft, 7=finance, 8=land shortage, 9=pests, 10=planting late, 11=contractor) [pproblem]*

***Animal production***

40 *Fill in the following:*

| | ***Cattle*** | ***Sheep*** | ***Goats*** | ***Poultry*** | ***Donkeys*** | ***Pigs*** |
|---|---|---|---|---|---|---|
| *Total no's* | [veeno] | [sheepno] | [goatno] | [poulno] | [donkno] | [pigno] |
| *Adult male* | [bul] | [ram] | [goatmale] | [haan] | [hings] | [beer] |
| *Adult female* | [koei] | [ooi] | [goatooi] | [hen] | [merrie] | [sog] |
| *Immature male* | [bultjie] | [ramtjie] | [gramtjie] | [kuiken] | | |
| *Immature female* | [versie] | [ooitjie] | [gooitjie] | | | |
| *Born past 12 months* | [vborn] | [sborn] | [gborn] | [hborn] | | |
| *Sold past 12 months* | [vsold] | [ssold] | [gsold] | [hsold] | | |
| *Bought past 12 months* | [vbought] | [sbought] | [gbought] | [hbought] | | |
| *Stolen past 12 months* | [vtheft] | [stheft] | [gtheft] | [htheft] | | |
| *Slaughtered past 12 months* | [vslag] | [sslag] | [gslag] | [hslag] | | |
| *Died past 12 months* | [vdied] | [sdied] | [gdied] | [hdied] | | |

41 *What was the common cause of death? (1=feed problems, 2=disease, 3=drought, 4=poison)* ___ *[hoedood]*

42 *What is your estimated annual income [R] from the livestock enterprise?* _____ *[aniinc]*

43 *Do you consider this veld to be in a good/fair/poor condition? (1=poor, 2=fair, 3=good)* ____ *[veld]*

44 *How many litres of milk are produced/day?* _____ *[milk]*

45 *How many eggs are produced/pay?* _____ *[eggs]*

46 *What do you consider to be the three main problems/constraints in animal production?* *(1=disease, 2=theft, 3=maintenance, 4=finance, 5=water, 6=grazing shortage, 7=drought)* _____ [dproblem]

47 *Inputs & Costs/year*

| ***Quantity [kg]*** | ***Cost*** | ***Vaccination & Dip $*** |
|---|---|---|
| [voerkg] | [koste] | [medicine] |

***ON FARM CAPITAL AND CREDIT & CONSTRAINTS***

48 *Mechanisation*

| ***Description*** | ***No*** |
|---|---|
| *Tractor* | [tractors] |
| *Implements* | [implemen] |

49 *Infrastructure* *(1=yes/2=no)*

| | |
|---|---|
| *Storage* | [stores] |
| *Crush pens* | [chrush] |

50 *Do you have any loans?* *(1=yes/2=no)* _____ [loans]

51 *Can you easily obtain a loan?* *(1=yes/2=no)* _____ [easy]

52 *Is transporting of agricultural products a problem for you?* *(1=yes/2=no)* _____ [vervprob]

53 *Do you consider the following problems to be: 1= very NB, 2= NB, 3= not NB*

| ***Problem/Constraint*** | ***Importance*** |
|---|---|
| *Buying inputs* | [saadmis] |
| *Selling produce* | [sell] |
| *Lack of fencing* | [drade] |
| *Theft* | [steel] |
| *Quarrels over land access* | [baklei] |

***INSTITUTIONAL ASPECTS***

54 *Who advises you on agriculture?* *(1=EO, 2=Coop, 3=other farmers, 4=literature, 5=tv/radio, 6=EO + other farmers, 7=EO+Coop+tv/radio, 8=EO+farmers+tv/radio, 9=EO+Coop+farmers, 10=EO+tv/radio, 11=Coop, farmers, tv/radio, 12= EO+literature+farmers+Coop)* _____ [advies]

55 *What topic would you like to get training in?* *(1=tractor maintenance, 2=management, 3=pest control, 4= soil preparation, 5=weeds, 6=planting)* _____ [kursus]

56 *Do you belong to a farmer's organisation?* *(1=yes/2=no)* _____ [CBO]

***F THE SHEILA PROJECT***

57 *Were you ever a contractor/participant of the Sheila project?* *(1=yes/2=no)* _____ [projek]

58 *Do you feel you learnt anything from the project?* *(1=yes/2=no)* _____ [learnt]

59 *Did the project have benefits for the community?* *(1=yes/2=no)* _____ [benefit]

60. *If possible, would you sell your land?* *(1=yes/2=no)* _____ [landsell]

ANNEXURE 3: DATA ON THE KEY CRITERIA IDENTIFIED, FOR SURVEY RESPONDENTS AS DIVIDED INTO THE FOUR TYPES DEVELOPED.

| Inactive landowners | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **resp#** | **lsize** | **meanha** | **edu** | **hspend** | **hsize** | **inc.#** | **inputkg** | **ay-mai** | **ay-sun** | **hiremec** | **stock#** |
| 2 | 15 | 2 | 2 | 650 | 7 | 2 | 2400 | 0 | 0.1 | 2 | 7 |
| 4 | 15 | 0 | 2 | 1200 | 4 | 3 | 2650 | 0 | 0 | 3 | 0 |
| 9 | 15 | 0 | 3 | 1050 | 4 | 1 | 0 | 0 | 0 | 3 | 0 |
| 13 | 15 | 0 | 3 | 1020 | 4 | 2 | 0 | 0 | 0 | 3 | 0 |
| 14 | 15 | 4 | 1 | 500 | 8 | 4 | 0 | 0 | 0.1 | 3 | 0 |
| 15 | 15 | 0 | 3 | 1100 | 7 | 2 | 0 | 0 | 0 | 3 | 24 |
| 16 | 15 | 0 | 3 | 305 | 4 | 2 | 0 | 0 | 0 | 3 | 7 |
| 17 | 15 | 0 | 1 | 480 | 12 | 2 | 0 | 0 | 0 | 3 | 0 |
| 18 | 15 | 0 | 1 | 300 | 6 | 2 | 0 | 0 | 0 | 3 | 0 |
| 19 | 15 | 2 | 1 | 530 | 12 | 3 | 0 | 0 | 0 | 3 | 0 |
| 20 | 15 | 4 | 4 | 620 | 3 | 2 | 575 | 0 | 0 | 2 | 11 |
| 22 | 15 | 0 | 3 | 390 | 4 | 2 | 0 | 0 | 0 | 3 | 0 |
| 27 | 20 | 3 | 3 | 1450 | 4 | 2 | 0 | 0 | 0 | 2 | 7 |
| 34 | 0 | 0 | 1 | 310 | 3 | 3 | 0 | 0 | 0 | 3 | 16 |
| 61 | 15 | 0 | 2 | 1680 | 6 | 3 | 2350 | 0 | 0 | 3 | 2 |
| 77 | 20 | 0 | 3 | 950 | 5 | 2 | 900 | 0 | 0 | 3 | 0 |
| 84 | 15 | 4 | 3 | | 3 | 1 | 1100 | 0 | 0 | 3 | 0 |
| 89 | 15 | 2 | 1 | 250 | 5 | 3 | 850 | 0 | 0 | 3 | 13 |
| 90 | 20 | 3 | 3 | 600 | 4 | 1 | 1625 | 0 | 0 | 3 | 0 |
| 94 | 15 | 2 | 3 | | 3 | 2 | 2500 | 0 | 1 | 3 | 3 |
| 96 | 15 | 0 | 3 | 1200 | 6 | 3 | 2500 | 0 | 0 | 3 | 0 |
| 101 | 15 | 0 | 2 | 750 | 10 | 2 | 0 | 0 | 0 | 3 | 23 |
| 104 | 20 | 0 | 2 | 650 | 4 | 3 | 0 | 0 | 0 | 3 | 14 |
| | **15.2** | **1.1** | **2.3** | **761.2** | **5.6** | **2.3** | **758.7** | **0.0** | **0.1** | **2.9** | **5.5** |

| Opportunists | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **resp#** | **lsize** | **meanha** | **edu** | **hspend** | **hsize** | **Inc #** | **inputkg** | **ay-mai** | **ay-sun** | **hiremec** | **stock#** |
| 5 | 15 | 10 | 2 | 1025 | 5 | 1 | 1850 | 0 | 0 | 2 | 0 |
| 6 | 30 | 15 | 1 | 1620 | 4 | 3 | 0 | 0 | 0 | 2 | 0 |
| 7 | 15 | 4 | 1 | 870 | 8 | 3 | 1650 | 0 | 0.5 | 2 | 11 |
| 11 | 15 | 12 | 1 | 450 | 4 | 1 | 75 | 0.2 | 0.1 | 2 | 0 |
| 12 | 15 | 12 | 3 | 1550 | 3 | 1 | 75 | 0 | 0.1 | 2 | 0 |
| 21 | 20 | 15 | 1 | 340 | 5 | 3 | 1700 | 0 | 0 | 2 | 0 |
| 23 | 15 | 4 | 2 | 1420 | 4 | 2 | 1600 | 0.7 | 0 | 2 | 0 |
| 26 | 15 | 4 | 3 | 520 | 4 | 3 | 725 | 2.65 | 0 | 2 | 0 |
| 29 | 15 | 12 | 2 | 820 | 6 | 3 | 1100 | 1 | 0.35 | 2 | 0 |
| 30 | 15 | 10 | 1 | 580 | 4 | 3 | 100 | 0 | 0.35 | 2 | 12 |
| 32 | 15 | 12 | 1 | 400 | 7 | 2 | 1575 | 0 | 1.2 | 2 | 14 |
| 37 | 15 | 12 | 3 | 700 | 3 | 2 | 50 | 0 | 0.75 | 2 | 0 |
| 40 | 15 | 12 | 2 | 600 | 4 | 2 | 50 | 0.75 | 0.3 | 2 | 23 |
| 44 | 15 | 12 | 3 | 510 | 5 | 3 | 800 | 0.1 | 0.75 | 2 | 0 |
| 45 | 30 | 15 | 1 | 850 | 3 | 3 | 0 | 0 | 0 | 2 | 0 |
| 46 | 15 | 12 | 1 | 1040 | 4 | 3 | 75 | 0 | 1.4 | 2 | 6 |
| 47 | 15 | 10 | 3 | 950 | 4 | 2 | 200 | 0 | 0.35 | 1 | 8 |
| 49 | 15 | 12 | 2 | 650 | 6 | 3 | 1575 | 0 | 1.3 | 2 | 9 |
| 52 | 15 | 10 | 2 | 900 | 10 | 3 | 75 | 0 | 1.65 | 2 | 22 |
| 56 | 15 | 12 | 2 | 550 | 6 | 2 | 1000 | 0 | 0.65 | 2 | 4 |
| 57 | 30 | 8 | 3 | 1060 | 10 | 2 | 1500 | 0 | 0.45 | 2 | 3 |
| 58 | 15 | 2 | 3 | 520 | 5 | 2 | 825 | 1.25 | 0 | 2 | 0 |
| 59 | 15 | 4 | 3 | 700 | 6 | 2 | 1500 | 2 | 0 | 2 | 0 |
| 60 | 30 | 8 | 2 | 950 | 5 | 3 | 3150 | 0 | 1 | 2 | 6 |
| 62 | 20 | 18 | 2 | 610 | 7 | 1 | 2200 | 0.25 | 0.15 | 2 | 0 |
| 63 | 15 | 4 | 3 | 2000 | 5 | 3 | 2550 | 0 | 0.1 | 2 | 19 |
| 67 | 15 | 10 | 3 | 510 | 5 | 3 | 1600 | 0.6 | 0 | 2 | 0 |
| 68 | 15 | 12 | 2 | 360 | 6 | 2 | 550 | 0 | 0.5 | 2 | 0 |
| 70 | 15 | 4 | 3 | 920 | 8 | 4 | 1800 | 0 | 0.45 | 2 | 10 |
| 72 | 15 | 4 | 3 | 1070 | 6 | 3 | 3250 | 0 | 1.5 | 2 | 0 |
| 73 | 15 | 10 | 4 | 2500 | 5 | 2 | 900 | 0 | 0.75 | 2 | 0 |
| 74 | 15 | 4 | 2 | 500 | 5 | 3 | 2525 | 1.3 | 0.2 | 2 | 8 |
| 79 | 15 | 4 | 2 | 1000 | 5 | 3 | 2400 | 1 | 0.85 | 2 | 0 |
| 81 | 20 | 13 | 2 | 300 | 4 | 2 | 1625 | 0 | 0 | 2 | 2 |
| 82 | 15 | 10 | 3 | 300 | 5 | 1 | 1100 | 0 | 0 | 2 | 0 |
| 83 | 20 | 7 | 2 | 580 | 5 | 2 | 900 | 0 | 0 | 2 | 0 |
| 86 | 15 | 12 | 2 | 250 | 4 | 1 | 2275 | 0 | 0 | 2 | 7 |
| 88 | 15 | 12 | 3 | 530 | 5 | 2 | 1100 | 0 | 0 | 2 | 12 |
| 91 | 15 | 12 | 2 | 820 | 4 | 4 | 2525 | 0 | 0.9 | 2 | 0 |
| 92 | 20 | 3 | 1 | 500 | 4 | 2 | 1200 | 0 | 1 | 2 | 0 |
| 95 | 15 | 2 | 2 | 750 | 5 | 3 | 1625 | 1.1 | 0 | 2 | 6 |
| 100 | 15 | 4 | 1 | 1000 | 8 | 2 | 1600 | 0 | 0.01 | 2 | 18 |
| 103 | 10 | 7 | 1 | | 4 | 3 | 600 | 0 | 0 | 1 | 10 |
| 105 | 10 | 5 | 1 | | 4 | 3 | 310 | 0 | 0.5 | 1 | 10 |
| 113 | 15 | 12 | 3 | 520 | 8 | 3 | 1625 | 0 | 0 | 1 | 44 |
| 118 | 10 | 8 | 3 | 610 | 6 | 1 | 1050 | 1 | 0.25 | 2 | 0 |
| | **16.5** | **9.0** | **2.1** | **800.1** | **5.3** | **2.4** | **1229.6** | **0.3** | **0.4** | **1.9** | **5.7** |

| Sharecroppers | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **resp#** | **lsize** | **meanha** | **edu** | **hspend** | **hsize** | **Inc #** | **inputkg** | **ay-mai** | **ay-sun** | **hiremec** | **stock#** |
| 1 | 30 | 25 | 2 | 500 | 8 | 3 | 4900 | 0.15 | 0.2 | 1 | 0 |
| 3 | 20 | 15 | 1 | 650 | 5 | 3 | 2175 | 2 | 0 | 2 | 0 |
| 8 | 30 | 25 | 1 | 570 | 6 | 3 | 2125 | 2.75 | 0 | 1 | 0 |
| 10 | 30 | 25 | 1 | 520 | 4 | 2 | 3650 | 0.5 | 0.1 | 1 | 14 |
| 24 | 15 | 15 | 2 | 1250 | 7 | 2 | 2175 | 2.65 | 0 | 1 | 12 |
| 25 | 30 | 25 | 1 | 1800 | 6 | 3 | 3300 | 2.5 | 0.15 | 1 | 11 |
| 28 | 20 | 15 | 2 | 900 | 4 | 3 | 1600 | 0.7 | 0.25 | 2 | 0 |
| 31 | 30 | 25 | 1 | 600 | 6 | 2 | 3300 | 2.25 | 0 | 1 | 14 |
| 33 | 50 | 40 | 3 | 700 | 6 | 1 | 2050 | 0.9 | 0.9 | 1 | 8 |
| 36 | 15 | 10 | 3 | 500 | 5 | 3 | 1475 | 0 | 0.5 | 1 | 4 |
| 38 | 45 | 10 | 3 | 650 | 6 | 1 | 1530 | 0 | 0.7 | 1 | 0 |
| 39 | 20 | 20 | 3 | 1450 | 8 | 3 | 1700 | 2.1 | 1.3 | 1 | 7 |
| 42 | 90 | 60 | 1 | 450 | 8 | 3 | 1750 | 0 | 1.75 | 1 | 5 |
| 43 | 105 | 75 | 2 | 730 | 4 | 2 | 525 | 0.1 | 0.9 | 1 | 0 |
| 48 | 45 | 30 | 3 | 2200 | 6 | 2 | 2800 | 0 | 0 | 1 | 20 |
| 50 | 75 | 25 | 1 | 1000 | 9 | 3 | 5500 | 1.8 | 0 | 1 | 12 |
| 51 | 60 | 30 | 3 | 1150 | 6 | 3 | 2375 | 0 | 0.6 | 1 | 10 |
| 55 | 30 | 20 | 3 | 1050 | 4 | 2 | 1625 | 1.75 | 0 | 2 | 0 |
| 64 | 30 | 20 | 4 | 1700 | 4 | 3 | 2000 | 0 | 0 | 1 | 12 |
| 65 | 30 | 25 | 3 | 950 | 4 | 2 | 1650 | 0.75 | 0.25 | 2 | 0 |
| 66 | 15 | 15 | 2 | 650 | 2 | 4 | 825 | 1.35 | 1.55 | 2 | 37 |
| 69 | 30 | 25 | 3 | 1180 | 9 | 3 | 1200 | 1.35 | 0.5 | 1 | 12 |
| 71 | 15 | 10 | 3 | 1275 | 6 | 4 | 3775 | 1 | 0.75 | 2 | 0 |
| 75 | 20 | 15 | 3 | 800 | 4 | 3 | 950 | 0 | 1.8 | 2 | 5 |
| 76 | 15 | 10 | 3 | 1370 | 4 | 3 | 2500 | 1.25 | 0.75 | 2 | 0 |
| 78 | 30 | 10 | 2 | 750 | 5 | 3 | 3250 | 2 | 0 | 1 | 0 |
| 80 | 30 | 25 | 2 | 1100 | 5 | 3 | 4950 | 2.5 | 0 | 1 | 0 |
| 85 | 40 | 22 | 1 | | 7 | 3 | 3250 | 0 | 0 | 1 | 9 |
| 87 | 60 | 40 | 2 | 640 | 8 | 2 | 4300 | 0 | 0 | 2 | 3 |
| 93 | 15 | 10 | 3 | 850 | 3 | 3 | 2525 | 1 | 1.25 | 2 | 0 |
| 97 | 20 | 15 | 3 | 850 | 4 | 3 | 3100 | 0 | 2 | 2 | 0 |
| 98 | 30 | 20 | 2 | 700 | 4 | 4 | 3250 | 2.6 | 0 | 1 | 0 |
| 102 | 75 | 44 | 3 | | 4 | 2 | 2700 | 0 | 0 | 1 | 4 |
| 106 | 10 | 10 | 1 | 650 | 3 | 3 | 1125 | 0 | 0 | 1 | 12 |
| 108 | 60 | 45 | 3 | 2100 | 4 | 3 | 1100 | 0.95 | 0.5 | 2 | 12 |
| 109 | 30 | 35 | 3 | 1400 | 4 | 2 | 7900 | 0.9 | 0.3 | 1 | 16 |
| 110 | 15 | 25 | 3 | 2370 | 6 | 3 | 1500 | 1.9 | 1.6 | 1 | 10 |
| 115 | 80 | 40 | 3 | 1450 | 7 | 3 | 0 | 0 | 0 | 1 | 26 |
| 116 | 15 | 15 | 3 | 600 | 5 | 1 | 950 | 0.75 | 0.45 | 1 | 2 |
| 119 | 25 | 20 | 1 | 660 | 3 | 3 | 2125 | 1.2 | 0 | 1 | 2 |
| 120 | 150 | 40 | 2 | 1250 | 4 | 2 | 375 | 0 | 0.35 | 2 | 29 |
| 121 | 30 | 15 | 2 | 700 | 7 | 3 | 1600 | 0 | 0 | 1 | 27 |
| 123 | 10 | 10 | 3 | 600 | 6 | 2 | 1600 | 1.7 | 1.55 | 1 | 0 |
| | **37.7** | **24.4** | **2.3** | **1006.5** | **5.3** | **2.7** | **2396.6** | **1.0** | **0.5** | **1.3** | **7.8** |

| Commercialising farmers | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **resp#** | **lsize** | **meanha** | **edu** | **hspend** | **hsize** | **Inc #** | **inputkg** | **ay-mai** | **ay-sun** | **hiremec** | **stock#** |
| 35 | 120 | 90 | 3 | 1800 | 5 | 2 | 14375 | 1.1 | 0.2 | 1 | 6 |
| 41 | 30 | 25 | 3 | 3000 | 5 | 4 | 1825 | 1.7 | 0.2 | 1 | 154 |
| 53 | 75 | 45 | 4 | 2300 | 5 | 2 | 3220 | 2.3 | 1.3 | 1 | 28 |
| 54 | 120 | 90 | 3 | 1000 | 7 | 3 | 3450 | 1.8 | 0.7 | 1 | 23 |
| 99 | 300 | 165 | 3 | 2250 | 6 | 4 | 5600 | 2.2 | 0.4 | 1 | 150 |
| 107 | 125 | 75 | 3 | 1650 | 5 | 3 | 4700 | 1.5 | 0.0 | 1 | 18 |
| 111 | 100 | 75 | 3 | 1600 | 4 | 3 | 6925 | 2.3 | 1.6 | 1 | 24 |
| 112 | 60 | 45 | 3 | 1150 | 5 | 3 | 6850 | 0.8 | 0.6 | 1 | 7 |
| 114 | 150 | 115 | 2 | 1310 | 5 | 3 | 7875 | 2.3 | 0.0 | 1 | 0 |
| 117 | 130 | 80 | 3 | 2100 | 7 | 3 | 1150 | 1.1 | 0.5 | 1 | 44 |
| 122 | 30 | 30 | 3 | 1400 | 5 | 4 | 9950 | 1.4 | 1.0 | 1 | 22 |
| | **112.7** | **75.9** | **3.0** | **1778** | **5.4** | **3.1** | **5993** | **1.7** | **0.6** | **1.0** | **43.3** |

## ANNEXURE 4: PARTICIPANTS IN THE PARTICIPATIVE LFA PROCESS

Meetings were held during August 02, as part of a participative LFA. The following farmers, for the developed groups, took part:

**"Inactive landowners":**

| | | | |
|---|---|---|---|
| Bokisi, L, | Ganjo, A | Lemme, P | Madikiza, A |
| Madikiza, G | Molefe, J | Mooketsi, J | Ntebele, H |
| Seleke, E | Tladinyane, OL | Xokiane, J | |

**"Opportunists":**

| | | | |
|---|---|---|---|
| Chwabi, E | Dladla, C | Lehapa, J | Lemme, S |
| Malothane, S | Moleme, B | Moribe, S | Morobe, A |
| Motseathebe, S | Qeba, JG | Sibeko, E | Mothiteng, J |

**"Entrepeneurs":**

| | | | |
|---|---|---|---|
| Khoarai, P | Matshe, pc | Mdluli, A | Mkhakho, C |
| Ngesman, C,Z | Nkashe, M | Ralephaleng, C | Serema, P |
| Thipe, J | Tshotetsi, pc | | |

**"Potentially commercial":**

| | | | |
|---|---|---|---|
| Cebisa, S | Cebisa, XJ | Dipholo, L | Lolwane, BR |
| Ntebele, P | Molefe, T | | |